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NEWS IN BRIEF

Bar on GEC strikers

A HIGH COURT injunction bars GEC's striking operators from all the company's Coventry works, as the operators' pay dispute remains 'unresolved'. GEC took legal action after operators staged a sit-in at the engineers' section of the Stoke, Coventry plant on May 23 and later occupied the computer room.

The strike arose on February 24, because the operators are unhappy with the pay rises offered by the company and it became an official ASTMS matter on March 20.

London is new HQ

THE US-BASED manufacturer of IBM 3350 replacement disc drives, Storage Technology, has, as expected, opened a London office (CW February 18) which becomes the firm's European headquarters. Storage Technology also manufactures main store extensions for IBM 370 computers.

Edutronics switch

THE assets of Edutronics Systems International, the US computer training materials manufacturer, have been acquired by McGraw-Hill, the publishers, for an undisclosed amount.

Thirtieth Argus

A MONITORING system based on a 112k word Ferranti Argus 700S processor will evaluate the performance of a 500 Megawatt coal fired boiler and turbine unit at Fiddler's Ferry Power Station in the CEBG's North Western Region. Worth over £200,000, this brings the total of Argus systems in power generation applications to 30.

Birthday honours go to Dorey and Ellis



EXPORT achievements by the computer industry were recognised in the Queen's Birthday Honours list by awards to Peter Dorey of Ferranti and Peter Ellis of ICL.

Dorey, who is appointed a CBE, is a director of Ferranti and managing director of Ferranti Computer Systems Ltd, a recently created grouping taking in all the company's computer and microprocessor activities. He was responsible for building up Ferranti's business in the military field and has also been closely involved in the joint venture with the Brazilian government and industry to build Argus computers in Brazil.

Peter Ellis, who is awarded the OBE, is ICL's director of worldwide marketing. He joined Powers-Samas in 1951 and

when that company merged with British Tabulator he formed the first programming group. He played a leading part in ICL in 1960 product planning and when ICL was formed in 1968 he became director of accounts, planning and commercial areas. He took over his marketing role in 1970.

Other honours include knighthoods for Robert Telford, managing director of GEC-Marconi Electronics, and for Amos Chilver, vice-chancellor of Cranfield Institute of Technology.

The MBE has gone to J. G. Walker, a personnel officer at IBM's Greenock plant, and the BEM has been awarded to H. D. Steven, a technical officer with the maintenance division in Edinburgh telephone area.



Peter Dorey

'Computers could halt government'

THE vulnerability of large government computer centres to disruption which could bring the business of various departments to a halt, is highlighted in a report prepared by senior civil servants. Strike action is among the dangers mentioned by the report.

However, trade unions representing civil servants say that although computer centres are useful targets for effective action, such action could not have the disastrous consequences that had been suggested.

The report is called 'The Longer Term Review of Administrative Computing in Central Government' and was prepared by a committee under the chairmanship of Richard Wilding, deputy secretary in the Civil Service Department, which includes the Central Computer Agency. The study was initiated partly because of the criticism about large government computer projects, such as the Swansea Vehicle Licensing Centre.

It appears as part of a wide-

spread cooling of enthusiasm towards wholesale introduction of computers and the government is expected to be less eager in future to introduce massive computer systems that may be made out of date by changing technology before they are ready for use.

In particular, there is much heated discussion at present over whether to computerise the collection of income tax, and this report may well swing that argument against computers.

He pointed out that wastage of government computer staff at present was very high, because of the difference in pay levels between the public and private sectors. Some installations were losing 40% of their programming staff a year.

Commenting on the report, the Civil and Public Servants Association said that any computer system could be replaced by manual back-up if necessary and strikes by computer staff

ASTMS highlights its strength in industry

DISCUSSION with NCR on grading and pay for engineers and a statement of its dominance in terms of membership, within ICL are two of the highlights of ASTMS activity in the computer industry this week.

A joint meeting is to be held between NCR and ASTMS tomorrow (Friday) at NCR's London head office to discuss a proposed new job grading plan and salary scales for 800 field engineers.

Talks held last month broke down and the union negotiating team recommended that the engineers take industrial action (CW, June 1), but this has not yet been voted on. A second meeting will be held tomorrow afternoon at which ASTMS representatives in NCR will discuss the situation further.

On another front, Tim Webb, national officer for ASTMS, has asked that a meeting with the

national officers of the other unions in ICL be set up to seek agreement on revised joint bargaining arrangements.

Webb believes that the present procedures do not reflect the correct membership positions of the joint staff unions, and has stated that "if these talks do not bring agreement, then we (ASTMS) shall have to look seriously at withdrawing from the ad hoc arrangements which were created during Phase 1 of the government's pay policy."

Setting out details of figures compiled by ICL on the sizes of various union memberships, they show ASTMS to be a clear winner with 8,975 members, while AUEW/Tass comes second with 783 members. The two remaining unions are APEX, with 615 members and the EETPU (Staff) with 187 members.

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If the RSRE run-time benchmarks are anything to go by, the HPA CORAL 66 compiler on a PDP-11/70 with cache memory (980ns) under RSX-11M (Version 3) has produced aggregate timings of 48.38 seconds. Of course, users run their own benchmarks — there is far more to real-time programming.

A compatible compiler is available on Computer Automation's LSI-2 and another soon to be released for the NM4-series — cross-compilers also available!

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Workers to be laid off by NCR at Dundee

A SWITCH in manufacturing policy by NCR will result in a considerable number of redundancies at the company's Dundee plant. Microprocessor boards for the 8100 family of small computers were to have been produced at Dundee both for the Augsburg plant in Germany, where the 8100 will be built, and as a second source supply in the Common Market.

General manager at Dundee, Dick MacDonald, said the change of plan had become necessary because of "further technological simplification" of the microprocessor and 8100 manufacturing. The end product would now have less labour content and "it would thus be uneconomic to involve two European centres."

He said it was not possible to say at present how many redundancies would be involved because it was likely that some standards might be as different from Cobol 74 as that standard was from Cobol 86. He suggested costs of possibly £1 a line of code for conversion.

Captain Grace Hopper, who oversaw the development of compiler validation procedures, believes that this work must now be taken up by a wider user community. Insisting upon standardisation.

The initial target of Digicast is

the home computer user but it also offers many of the applications now being provided by information services such as Digicast.

• See Software File, page 7.

US range additions

A SMALL business system is to be marketed by National Semiconductor in the US, as an addition to its operations in IBM-compatible computers and add-on memories.

The 1780 has passed all its reliability tests and preproduction model will be undergoing final checks next month.

SEARCHING for a particular car for sale in a certain price range.

Initially operating at 1,200 bps, printer terminals could be used to provide a copy of the selected information.

Delegates attending international conferences, for example on technology transfer to the Third World, often have to make major decisions without having the full information at their finger tips," he said.

• Turn to page 2

THE world's first electronic newspaper, transmitting information digitally to its readers, could be in operation by the end of the year in the San Francisco Bay area, and the system, called Digicast, could be of interest to the United Nations for assisting in technological understanding and decision making.

Digicast is the sole supplier in Europe of the 8100 series and the 8400 and 8500 Criterion systems.

There is also the 24-hour self-service banking terminal, the 1780, which was entirely designed and developed at Dundee and has already attracted the attention of US and Canadian banking organisations.

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Everybody is talking about it...

IT was a long time ago that Mark Twain said, "Everybody talks about the weather but nobody does anything about it." Today he might put it, "Everybody talks about the Social Impact of the Microprocessor Revolution but . . ." And he would be right. The Labour Party, under the leadership of Tony Benn, is talking about it; there are two groups of Tory MPs talking about it; the TUC prompted by ASTMS, is talking about it, and several pundits have made speeches that have been reported with much solemnity in the Press, all agonising over our seemingly inevitable large-scale unemployment, to go with the large-scale integration.

In its eagerness to get to grips

COMPUTER WEEKLY

Vol. 24 No. 605
Thursday, June 15, 1978

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York, NY 10017.
Tel: (212) 487 2080. Telex: 421710.
Post Office Box 1737, Thursday.
Registered at the Post Office as a
newspaper. Price per copy 10p.

© IPC Electronic Press Ltd 1978.

Computer Weekly is sent free of charge to the following organisations in the UK and EEC only:
Computer Distributors, Consultants, Contractors, OEMs, Management Services, Publishers, etc.
VANIC responsible for computing, management, programming, consultants, installers and dealers, software, systems analysis and design, programmers, operators, computer software, field engineers.

Controlled Circulation Department: IPC Avon
Press (Sales & Distribution) Ltd, 49
Southgate Green Lane, London EDIN 9EE. Tel:
01-437 3556.

Subscriptions for readers outside the above
countries, One year, UK £11.25, Overseas
£24.50, Geneva \$35, Canada \$38, Australia \$38,
New Zealand \$38, Japan \$42, Airmail rates
from £10.50. Business Press
(Sales & Distribution) Ltd, 49 Southgate
Green Lane, London EDIN 9EE. Tel:
01-437 3556.

Computer Weekly has a circulation
each week of over 62,000 including the
highly-favoured circulation in
the U.S.A. In its first edition, which is published 10 times a year, the
circulation of over 64,000.

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Ten years ago...

COMPUTER WEEKLY
JUNE 13, 1968

THE first production of Braille text with the aid of a computer was to be undertaken by the RNIB. A merchant bank, Singer and Friedlander, placed the first order for an online system with Burroughs. An agreement was signed between Ferranti and a Swiss electrical firm to market Argus computers in Switzerland. Hungary's first domestically-designed computer, the BMG 820, entered the production stage. Train movements along the 47 miles of railway lines around Lahti City, Finland, were monitored by an EMIS 3000. Eleven technical journalists went back to school to learn about computers, or a two-day upgrade course arranged by NCR.

He tested it and it worked very well. The trouble was that, when he tried to delete the program, as soon as he had discovered its current ID, this had been changed to something else. The only way that the program could be deleted was by means of a half load.

The Moral: Don't start some-

thing that you can't stop.

This week's £5 Interruption price goes to G. B. Barrow of Orpington,

for his excellent article on the

use of the new

IBM 2972.

INTERUPT

One day a programmer, having nothing much to do at the time, amused himself by writing a program whose sole function was to keep on changing its own ID.

He tested it and it worked very well. The trouble was that, when he tried to delete the program, as soon as he had discovered its current ID, this had been changed to something else. The only way that the program could be deleted was by means of a half load.

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MORE FROM ANAHEIM

Compucolor II—the most talked-about system at the NCC

"I HAVE not been so excited by a new product since I first saw an experienced British computer user on show at the NCC, at Anaheim last week — the Com-

puter users to do. In fact, as can be seen from the history of the first Industrial Revolution, technological changes produce entire new industries that no one had dreamt of before, and there is every reason to believe this can happen with the Second Revolution, too. Just reflecting on the state of most of the world, one realises there is a great deal still to be done."

What will certainly happen is that fewer jobs will involve purely mechanical operations, and more will involve creativity and the making of value judgments, and this is all to the good. It will, however, have traumatic effects on much of the working population.

The talk will doubtless continue. Hopefully it will develop along more positive and practical lines than all the wailing and gnashing of teeth we have heard hitherto. Then eventually there might even be some action.

For the present, let the last word be this story, currently going the rounds of the Post Office Engineering Union:

"What is the staffing level for the new System X exchange?"

"One man and a dog."

"What does the man do?"

"Feed the dog."

"What does the dog do?"

"Make sure the damn fool man never touches the equipment."

Meanwhile the prophesies of

doom continue to fall like Bob Dylan's Hard Rain, and talk abounds of work being a privilege by the end of the century, a mind-boggling concept for those of us whose days could easily be 36 hours long without exhausting the supply of things that needed to be done.

The high definition, high quality colour display of the Compucolor II, including simple to use picture-building capabilities, which had a dramatic impact on the crowds at the Compucolor Corp stand, makes the system ideal for the educational as well as home and business market.

After viewing the system, many of the NCC visitors said that it would be difficult to go back to plain grey and white screens.

But Warren emphasised that although this could be a potential application, his immediate aim was to provide a "user paper" for the general public. He said that there was an information explosion and by putting information in machine readable form, computers could be used to scan and present information that was relevant to any particular need.

He did not like systems as they assumed the recipient had dumb terminal, and such systems did not update information quickly enough.

The system would provide a major boost to the home computer market, he said, because it would open up new and wide ranges of useful functions. Warren said he believed he could stock exchanges, news services, airlines and other information providers to join in the game as well as individuals.

Access to the service would be free but he hoped to pay a with revenue from advertising.

Compucolor applications engineer Ron Westmorland told Computer Weekly that the system is likely to be introduced to Europe in about six to eight months, by which time the company could cope with the expected increase in demand.

No doubt their subsequent report to the Post Office Establishment was gloomy. In fact, they could hardly have chosen a more hostile venue. "Knock The Post Office" was very much the theme of the day. As far as the DP Industry is concerned, Post Office lines of communication are certainly crossed. Good words for the Post Office were few and far between — adverse comments being in multiplex mode. The conference was perhaps misguided. A more realistic theme could well have been "Before setting up a data network, first sort out the Post Office."

The Post Office apparently offers not so much a guiding hand, but a restraining boot. Predictably, John McNulty from Modular Technology, had some harsh comments. "The future

for datacom was glorious and exciting. The only handicap to progress was the UK Post Office."

John McNulty did not criticise the Post Office in making a vast profit, providing it was not achieved on a monopolistic basis and that large-scale users were not subsidising the smaller user.

The Post Office Act has turned out in practice to be a total winner. It is a rag-bag of an Act which incidentally, appears to be contrary to the EEC mandate which stipulates that monopolies — both private and State — must not act unfairly.

Consultant Iann Barron was equally forthright. Post Office charges he declared, are not based on cost but on what the market can bear. In effect, the Post Office pension fund seems to be dictating the policy. Technology should be the means of reducing costs, not as the Post Office prefers, a method of extracting ever greater sums from users.

Dr Adrian Stokes from Langton Information, kept his head down in the Post Office

and limited his talk to the impact of communications on computing. His suggestion, however, that the telecommunication method of communication was the ultimate solution, was challenged from the floor.

By now delegates to such conferences know what to expect. Praise and congratulations will be in short supply. The fact that most present will achieve much, despite the near-insurmountable odds will go unrecognised. Such odds include devious DP teams, hesitant management, unhelpful users and reluctant machines. No wonder with all these problems, polite communication is deemed feasible.

Similarly, it seems that the Post Office gets all the kicks. Ignored are the often highly competent engineers in the field. Post Office Acts, at this level, could well involve working beyond the calls of duty (or unions) with a large dose of personal involvement. Somehow the Post Office lines always seem to get crossed. Busybodies would be better employed buggering the Post Office higher executive than the TV viewer. Likewise, the DPMA would have been better advised in the interests of the whole industry, to have included a senior official from the Post Office itself purely to keep the balance.

Confrontation on this scale would have achieved much in the cause of practical communications.

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ONE DAY A PROGRAMMER, HAVING NOTHING MUCH TO DO AT THE TIME, AMUSED HIMSELF BY WRITING A PROGRAM WHOSE SOLE FUNCTION WAS TO KEEP ON CHANGING ITS OWN ID.

HE TESTED IT AND IT WORKED VERY WELL. THE TROUBLE WAS THAT, WHEN HE TRIED TO DELETE THE PROGRAM, AS SOON AS HE HAD DISCOVERED ITS CURRENT ID, THIS HAD BEEN CHANGED TO SOMETHING ELSE. THE ONLY WAY THAT THE PROGRAM COULD BE DELETED WAS BY MEANS OF A HALF LOAD.

THE MORAL: DON'T START SOMETHING THAT YOU CAN'T STOP.

THIS WEEK'S £5 INTERRUPTION PRICE GOES TO G. B. BARROW OF ORPINGTON,

FOR HIS EXCELLENT ARTICLE ON THE USE OF THE NEW IBM 2972.

INTERUPT

ICL 2972 offers 50% more power

TO ward off increasing competition, primarily from IBM with its low-cost 303X computers, ICL has introduced a new machine, the 2972, and an enhanced version of the 2976, both of which employ low-cost 16K bit memory chips.

The 2972 costs only slightly more than the 2970, but offers about 50% more power. And like the 2976, the 2972 has the same order code processor as the 2980. As expected, one of the first customers for the 2972 will be Oxfordshire County Council (CW, June 8), which is having a 25 Megabyte system. The 2972 will provide Oxfordshire with more than three times the processing power of 1600 bpi tape systems and uses the group code recording format.

Another new product announced by ICL is a 6250 bpi density magnetic tape system, the MT 1250, which can be used with 2970, 2972, 2976 and 2980 systems running under VME/B. The MT 1250 provides up to four times the data transfer rate of 1600 bpi tape systems and uses the group code recording format.

The storage systems supplied with the 2972 and the new 2976 have the same type of store access controller and store multiple access control, but the main store of the 2976 is faster because it is interleaved. The maximum main memory size on the new 2976 is eight Megabytes and the overall performance of the new machine is about 20% better than the existing 2970.

ICL points out that the new 16K bit chip store can be used to enhance the 2970 and the older 2976. A 2 Megabyte store using the 16K bit chips occupies only two cabinets, while the 1K bit chip memory supplied with the older 2976 required six cabinets to provide the same capacity.

To make program conversion easier for the 2972 or 2976 customer, ICL has also introduced an enhanced version of the Direct Machine Environment emulator called DME+. This enables a 2980 order code processor running 1800 or System 4 programs under DME to share a common storage system with a 2972 or 2976, operating under VME/B.

In the two months since it was announced, the Compucolor has taken about 1,700 orders and a production line is currently being set up in Norcross, Georgia, to produce about 150 a month. First deliveries are due this month. The system would provide a major boost to the home computer market, he said, because it would open up new and wide ranges of useful functions. Warren said he believed he could stock exchanges, news services, airlines and other information providers to join in the game as well as individuals.

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At present there are three models of WordCom, capable of accepting media from IBM, Redactron, or Vydec word processors. Each will cost between £5,000 and £8,000. The EditWriter model 7500 sells for £14,000.

CompuGraphic makes a unit called WordCom, which accepts magnetic cards or floppy discs from a word processor and converts the text into a form usable by the EditWriter typesetter.

A key issue of the future is saying that it was all about the irresistible force of VLSI meeting the immovable object of software.

The lack of software engineering standards, he said, was intolerable to the semiconductor industry, which had to do their own typesetting as well as components, supplies.

Loud applause greeted Bob Helkes, assistant general manager of semiconductors at Motorola, when he summarised

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This WordCom should not be confused with the word processor of the same name sold by Interian.

HARDWARE for typesetting direct from a word processor has been introduced to the UK market by Gestetner, the duplicator firm. Gestetner has taken the franchise for in-house printing of the CompuGraphic range of phototypesetters, from the US.

Gestetner already sells large numbers of small offset printing presses to firms which wish to do their own printing rather than go to outside printers, and this new equipment

DOWNTIME

by Chad



Cycling the results

DO you have a pair of giant milk bottles beside your desk? The gentlemen in my picture are not measuring the output of cows, but keeping track of the placings in the round-Britain cycling Milk Race, using a Texas Instruments programmable calculator.

Computerised time-keeping of races is all the rage nowadays. The Manx government's Univac 80/30 is being used at the Isle of Man TT races this year. As an example of hitching up a carthorse to Concorde this could hardly be bettered — the figures are read

off a VDU and painted on to a scoreboard by hand!

Computers were introduced into the Head of the River Boat Race on the Thames several years ago, replacing a manual timing system of awe-inspiring complexity. I was once (not that long ago) drafted into the team of schoolboys carrying out this job, sitting at a long line of tables in a hotel in Putney, filling out cards and passing them on to the next boy, without the slightest idea of how the whole amazing scheme worked. It did, though.

Golden Fleece award

THE Americans have a way of making their government colourful. Senator William Proxmire, "source of the Washington bureaucracy and critic of dubious computer projects," has taken to presenting a "Golden Fleece Award" to the government project involving the most ridiculous waste of taxpayers' money each month. Among the winners have been a study on why people fall in love, an

experiment on how long it takes to cook breakfast, and a study of relationships in a Peruvian brothel.

Many of the recipients of the award are scientists, who, naturally enough, fight back. One winner, an astronomer who is using NASA's radio-telescopes to listen for signals from extraterrestrial life, says of the Senator, "He deserves an honorary membership in the Flat Earth Society."

Computer Marketing

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Newbury Lab's new range of British VDUs	Prices from £535
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THE standardisation situation as it affects the European computing scene was the subject of a recent seminar in Paris when the transition from today's

somewhat chaotic position to a more harmonious future was examined. With the emphasis on evolution rather than revolution, our SPECIAL CORRESPONDENT, nevertheless, set out here to show why a little headway is to be made in the important field of standards.

Where next with standards?

STANDARDISATION is seen by many responsible for computing policies as the key to future systems development. The need for effective interchange of system elements, their interworking and quality assurance, was highlighted in an NCC report early in 1978 which generated considerable interest. It discussed the vital importance of standards especially in some rather mundane areas, such as character codes and sets, and data element representation where common implementation levels are vital.

In reviewing the present scene at the beginning of the seminar, NCC's Ray O'Connor examined the area of implementation of existing standards, and concluded that quality control is badly needed. An NCC audit of the implementations of standards for information codes showed that in the case of CCITT International Alphabet No 2, 47 out of 59 characters were correctly implemented by all implementations, while in the case of the ISO 7 standard, the score was 54 out of 128 characters. EBCDIC scored 49 out of 256. There is a clear need for audit aids which automatically audit implementation and check their alignment with the specification.

Pioneer examples are

the US Navy's Cobol and

inter-standard conversion aids and programs is roughly proportional to the square of the number of differing systems, demonstrating the build-up of chaos likely to result from non-aligned systems which will be inevitably passed on to the consumer as higher cost. This is an area where prospective standardisation is most urgently required ahead of widespread implementation of differing subsystems.

The machinery for the development and endorsement of standards was reviewed by Hugh Ross, chairman of the DP Committee of the British Standards Institution. He contrasted the performance of a "closed" standards-making body, consisting of bodies with a similar viewpoint, CCITT, with that of ISO. Of some 350 current CCITT standards some 20% are updated each year and it has some 80-plus projects in hand. In contrast, ISO's corresponding committee, which necessarily must involve a wider range of participants with differing and sometimes conflicting interests, is slow to move. It did, though.

Procurement policies were seen as the key to getting standards implemented, by Harry White of the US National Bureau of Standards, and he outlined the policies now being pursued by the US General Services Administration.

These require new equipment acquired to align with standards, and the US is pursuing a policy of progressive alignment of all its equipment with relevant standards.

Some of the obstacles to standardisation seen by various speakers and contributors free the floor included resources, most standards development is still done by voluntary effort, and funded professional help would accelerate production.

Others included quality assurance, based on either full testing of all implementations, or sample only; and also an urgent need to develop man-system interface standards, an area where little work has been done.

During discussion, Ray O'Connor reported the experience of one UK company which has run into difficulty as a consequence of an intelligent interpretation of a standard — in this instance a connection with the packing of film labelling information in a way that the labels could no longer be read by other standard equipment. Standards extension was raised by J. M. Sykes, chairman of BS Committee DPS/13, who suggested

standards in the same area, although it has circulated some 1,600 documents to date. Other resources needed were identified by the same speaker and included money/manpower for the development of standards, and an information service so that users can locate standards where they need them, and relevant information analysis and recommendations, as a back-up support service, where appropriate.

The rapidly increasing importance of standards for open system working was highlighted by Hubert Zimmerman of IRIA, the chairman of the Architecture Working Group of ISO's Committee in this area, SC16 of ICOT. He illustrated the vital role of such standards in unrestricted interconnection — the key to general information networking and thus many fu-

ture applications — which is to become practical and economic. This was also highlighted as "Why high level protocols are increasingly important" (CW February, 1978). Forward compatibility of systems and applications with any manufacturer's equipment, thus eliminating conversion problems, was illustrated by this speaker.

His comments were echoed

Dr H. J. Burkhardt of GMD, and Ray O'Connor both of whom foresaw increasing interconnection of differing systems. The latter mentioned the integration of a number of computing areas such as DP, scientific computing, CAD, and process control.

"We have just started operations out of our subsidiary in Minneapolis," Thi Truong, R2E founder and told Computer Weekly. "We are also introducing the Micral CM multiprocessor system, consisting of a data file

NEWS IN BRIEF

Poly centre to cost £185,000

THE Department of Education and Science has approved a £185,000 scheme to build a new computer centre at the Lancaster Polytechnic, Coven-

try.

The centre is to house the Polytechnic's ICL 19035 which is used mainly for teaching and in-house work. Building is due to start next year and should be completed by Christmas, 1979.

That is the finding of a survey conducted on computer store customers, by Image Resource of Westlake Village,

California.

According to the survey, 27% of customers were engineers, including 48% in manufacturing industries. Programmers at students, who were 18% of customers. Doctors and accountants both took up 2%. Although the personal computer market is often seen as a young person's hobby, 45% of the customers were over 30, with

16% over 40. Self-education was given as a reason for buying equipment by 61% of customers, exactly the same figure as for those who wanted to use it for games.

Software development was identified by 57% of the users and word processing by 31%. And a sign that the systems are rapidly being integrated into everyday life is that 30% are using personal computers for school work.

Some 53% of customers repaired the systems themselves and 38% expected the store to undertake maintenance, a sign that the personal computer market is radically changing the user/manufacturer relationship.

1978 Profile of Computer Store Customers \$189. Published by Image Resource, 717 Lakefield Road, Suite B, Westlake Village, California, USA.

Profile of a typical computer store customer—US style

THE typical computer store customer in the US is an engineer, aged 28, earning \$21,000, who belongs to a company of fewer than 20 employees and has had over four years of college education. And self-education or game playing are the most likely applications of the personal computer.

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Software development was identified by 57% of the users and word processing by 31%. And a sign that the systems are rapidly being integrated into everyday life is that 30% are using personal computers for school work.

Motorola hits the jackpot

CLAIMED as the largest order for microprocessors and related components outside the US, Motorola is to supply £50,000 worth to Barcrest, of the US's leading makers of fruit machines.

Barcrest managing director John Marshall said his company was planning to use micros to win export markets.

"Each nation has different requirements both in fashion and law," he said. "To meet these varying needs the company is now building a standard controller that can be programmed to suit market requirements.

Sintrom to sell Centronics range

THE full range of Centronics line and character printers are to be sold in the UK by Sintrom following the completion of a deal between the two companies. Sintrom will be providing servicing and support for end users throughout the country.

Personal computing comes of age at Anaheim

THE personal computing market seems to have come of age in only 12 months. It was first featured at the NCC last year in Dallas, where a handful of hobbyists gained enormous attention for ingenious but amateurish exhibits; and by 1978, at Anaheim, the centre of the stage was taken by small companies offering business applications on microcomputers, and companies offering low-cost peripherals.

Typical of the products featured was the new R2E Micral V microcomputer in suitcase,

management processor capable of supporting up to four independent microcomputer stations, each with its own local memory, input-output bus and serial input-output channel.

"The stations can support a local or remote terminal, which can be anything from a CRT display to a Micral C or Micral V system."

"We are building the Micral CM in the US for the local market," he added, saying that the system can support up to 80 Megabytes of mass storage and is programmable in ANSI Fortran IV, using the Fort/80 compiler on licence from Unified Technologies of Toronto. It is also programmed in the standard Micral BAL language, and CIS Cobol from Micro Focus of the UK will be available shortly.

"The stations will support a local or remote terminal, which can be anything from a CRT display to a Micral C or Micral V system."

Typical of the applications now being pursued by the so-called hobby market is medical data management for doctors. An attractive product for this market was exhibited by PAM, Professional Accounting Machines, of Santa Ana, California.

The Medac 310 system for

PAM includes a small neat video terminal, 8K of RAM and 12K of ROM backed by dual floppies and supporting a fast character printer, and is programmed to handle patient billing, insurance claims preparation, debts, a daily and monthly financial summary, patient account listing and daily appointment calendar, and costs \$18,974.

Zilog claims 'best of 370 and PDP-11 families' for Z-8000 16-bit micro

THE best attributes of the IBM 370 and Digital Equipment PDP-11 computer families, without their worst attributes. This is what Zilog is claiming for its Z-8000 16-bit microprocessor, scheduled to be introduced towards the end of the year.

Some of the aims of the California-based micro-maker were outlined by Northern European marketing manager, Phil Pitman, when he talked about the details of the device at last week's meeting of the BCS microprocessor specialist group.

The design of the Z-8000 had been heavily influenced by the successful 370 and PDP computer families, as well as by Zilog's own Z-80 eight-bit device. The company's design team is trying to incorporate the advantages and eradicate the disadvantages in the architecture of the new micro.

The Z-8000 will be capable of dealing with data elements ranging in length from single bits up to 32-bit words. The full instruction set will incorporate over 110 instruction types.

To increase the direct memory addressing capability beyond 64K bytes, the device

will utilise a segmentation approach to allow direct addressing of up to 8Mbytes. The memory will be made up of up to 128 segments, and the addressing will be handled by a memory management chip due to be launched during 1978.

There will be two versions of the Z-8000. The 8 Mbyte chip will be housed in a 48-pin package, while a 40-pin version will be available for applications

GOVERNMENT COMPUTING

DEPARTMENT OF TRADE (MARINE DIVISION)

Replacement plotting equipment (either pen or electrostatic type) is required. The existing hardware consists of a small incremental digital plotter and controller driver locally by a Vantek 5500 series machine.

Applications for operational requirements, quoting CEH5, to Central Computer Agency, Room B22, Riverwalk House, 167-181 Millbank, London SW1P 4RT.

Gemini moves into the recruitment field

Bacon, formerly with Combyte Services in Manchester, has joined the company to manage the new section.

Peter Clarke, manager of Gemini's northern region, said Gemini had decided to venture later to cover London, and Ian

into the personnel field because many clients had asked for recruitment advice and assistance. The new service is independent of Gemini's software activities but will be complementary to it.

SOOER

Summer Computer League

High-scoring Staffsco are clear leaders of Division I after defeating C. J. Bee's and Wallerix 9-3 and 12-0, respectively. The results are as follows:

Division I
Rank Xerox 1; SIA 4; Comshare 2, Datacom 3.

Division II
Atkins 1; Lambeth 2; Altergo 2; Altergo 2, Datacom 2 (City).

Division III
JPC Victoria 2; Gill & Duffus 4; 3M 5; Airtex 2; Xerox (London) 3; JPC Victoria 15; Xerox (London) 1; Datacom (West End) 2.

Division IV
Burnd DS 1; UCSI 2; Staffsco 12; Wallerix 9; C. J. Bee's 3; Staffsco 9; Computer University 0; Burnd DS 0.

Division V
JPC Victoria 2; Gill & Duffus 4; 3M 5; Airtex 2; Xerox (London) 3; JPC Victoria 15; Xerox (London) 1; Datacom (West End) 2.

Division VI
Airtex 2; Xerox (London) 2; Altergo 2; Wallerix 9; C. J. Bee's 3; Staffsco 9; Computer University 0; Burnd DS 0.

Division VII
JPC Victoria 2; Gill & Duffus 4; 3M 5; Airtex 2; Xerox (London) 3; JPC Victoria 15; Xerox (London) 1; Datacom (West End) 2.

Division VIII
Airtex 2; Xerox (London) 2; Altergo 2; Wallerix 9; C. J. Bee's 3; Staffsco 9; Computer University 0; Burnd DS 0.

Division IX
Airtex 2; Xerox (London) 2; Altergo 2; Wallerix 9; C. J



WITH 108 sessions and over 500 speakers, the NCC conference could not be criticised on grounds of quantity. But its very size tended to confuse rather than elucidate.

The overall theme attempting to tie it all together was computers and energy. But many of the speakers, such as the keynote speaker Senator Fritz Hollings, brought in energy almost as an afterthought.

In his speech that was full of colourful nationalism and praise of the free enterprise system, Senator Hollings stressed that information technology was of vital importance to the nation — and so was energy.

Industry at crossroads

Another major speaker on the "energy" theme was Portec chairman Ryal Poppa. But he really spoke about the personal computer market (see below) and merely referred in passing to the way personal computers could be used in energy conservation applications.

In fact, the real theme to emerge from the sprawl of papers was that the computer and semiconductor industries were merging together into a unique synthesis — the outcome of which is unpredictable, except to say that "You ain't seen no-

thing yet."

Bob Heikes of Motorola said that the new emergent technology would be created by a "unique juxtaposition of architectures incorporating microprocessors and functional processors as examples of future trends. But he pointed out that "the trick will be to find a way of mass producing these systems so that they can be sold like popcorn."

Les Hogan, vice-chairman of Fairchild, pointed out that the semiconductor industry has moved out of the era of supplying discrete components to computer manufacturers and has reached a point where the semiconductor "components"

have become the heart of the system.

"There must be more of a feedback from the architectural designers to chip manufacturers," he said and looked to architectures incorporating microprocessors and functional processors as examples of future trends. But he pointed out that "the trick will be to find a way of mass producing these systems so that they can be sold like popcorn."

On an optimistic note, he concluded:

"We are about to write the most exciting chapter the two industries have written — and we must do it together for the needs of the future will not be met separately."

Japanese attack in the spotlight

THE Japanese attack on the US mainframe manufacturers and its technological advances in integrated circuit manufacture were highlighted when for the first time at NCC, a series of sessions were devoted recent developments in the Japanese computer industry.

Latest techniques in LSI and VLSI integrated circuit manufacture were discussed, and details were given of the new 128K-bit ROM which is being sampled at the electronic communications laboratories of the public sector Japanese PTT Nippon Telephone and Telegraph. The device was said to have an access time of 200 nanoseconds, to be 20 square millimetres in area and to have a power consumption of 65 milliwatts.

The need for such a device is dictated by the Kanji character set which is the only one in which unambiguous Japanese

can be written. Some 2,000 different Kanji characters are required for everyday usage, but four of the new chips can store 1,820 different characters, and they will be an important feature of the planned Japanese viewdata system.

The success of the three major groupings of manufacturers in developing ranges of mainframes to compete with IBM's 370 line was discussed and it noted that Nippon Electric's Acos 77/900 system, which is similar to the 66/85 project that Honeywell aborted, offers two to three times the power of IBM's 370/168. It comes with up to four CPUs, offers up to 16 Megabytes of main memory and up to 18 channels with a transfer rate of 60 Megabytes per second.

The machine is based on Honeywell Level 66 licences, and the circuit chips currently have the highest gate density, up to 200 gates per chip.

Software seen as a block on semiconductor growth

SOFTWARE could be the major limit to the growth of the semiconductor industry and this "intolerable situation" will be overcome by semiconductor manufacturers insisting on improved software engineering techniques.

That message, summarised in an electric speech by Bob Heikes, assistant general manager of semiconductors at Motorola, was the unchallenged conclusion of an NCC session on the impact of semiconductors on computer architecture, chaired by semiconductor president of Intel, Gordon Moore, president of Intel.

Dr Moore gave birth in the mid-Sixties to what are known as Moore's laws, defining the relationship between lower prices and increased complexity of chips — getting "more" and more for less and less" as Heikes quipped.

This trend, said Moore, had reached the point where "we are no longer limited by the art of the possible but by our ability to define and design the applications to which we wish to put the systems to use."

Heikes emphasised this point by saying: "Hardware progress is so rapid that a major worry is that our customers cannot effectively use the systems."

But his most stringent words were addressed to the software business. "The irresistible force of VLSI," he said, "is meeting the immovable object of software." The "laws of survival" for the semiconductor industry demand reduced prices and this in turn required "prodigious production," he said. For example, by 1980 more microcomputers will be produced per day than the entire minicomputer production per year at

present.

Low costs and high productivity have been the hardware key, he stressed. By contrast, software has been characterised by high costs and low productivity.

This could lead to more "ware in silicon" firmware with, by 1990, complete microcomputers on a chip operating at up to 20 million instructions per second and including system software.

Up to eight terminals can be supported, and the communication protocols available or under development include IBM 3277, 3271 and 2280; Univac UTS 400 and Honeywell VIP 7780.

The real importance of semiconductor manufacturers' software was illustrated by Jimmie List, manager of MIS operations for Texas Instruments. Before the 1970s, he said, software formed a small part of the semiconductor manufacturer's costs. Now, however, software is about 20% of the costs and soon it could be 50%.

Microcomputer designers

Hobbyist market due for 'shakeout' soon says Portec chairman

THE growing markets in the personal computer field will be for small business and home management systems, but there could be a significant "shakeout" in the hobbyist market in the very near future, according to Ryal Poppa, chairman of Portec Computer Corporation.

Speaking at the NCC personal computing luncheon, Poppa said

using a small computer to maintain an inventory on his 900 brothers.

The home management type of application, he said, was very similar to a business application, so Poppa defined the nature of a system by its application rather than whether it was used at home or in business.

"Personal computer" small business systems are already a multi-billion dollar market, he said and he predicted that the home management market

would reach the same scale by the late 1980s. He believed, however, the hobbyist market was saturated and had too many companies.

Entry into the market, he pointed out, had been on the increase and he estimated there are currently over 750 companies in the field, including IBM with 5110 which is already being sold through IBM computer stores in the US. By the early Eighties, however, he believed the number would be only about 200.

The Japanese were represented in greater strength than ever, with Nippon Electric, Fujitsu and Hitachi all selling OEM peripherals. Siemens is also expanding its OEM activity, and the ND-2 laser printer was shown on both the Siemens and ICL stands.

COMING into the show at the last minute, Digital Equipment

Invitation Microprocessor Services from Oxford Systems Associates

AFTERNOON SEMINAR
ON JULY 7, 1978

— Are you curious as to how microprocessors can help you?
— Are you an engineer with no experience of software?
— Are you trying to evaluate the potential of different microprocessors?

Oxford Systems Associates Limited and Interactive Systems Limited invite you to an afternoon seminar on July 7, 1978 in Central London to see for yourself the potential of microprocessors for developing microprocessor programs. There will be presentations on Microprocessor Applications by Dr. David Clarke, and on Mini-Computer Business Services by John Wootton of Wootton, Jeffreys & Partners. On display will be examples of microprocessor applications and there will be a demonstration of USA's Cross-assembler and Simulator with an opportunity for you to use the Simulator and evaluate its capabilities.

For further information contact Oxford Systems Associates, 80 Chiswick High Road, London, W4 1LZ. Tel: 01-991 4311.

Please reserve ... places on your Microprocessor Services Seminar on July 7, 1978.

Name ...
Position ...
Company ...
Address ...

UNANIMOUS satisfaction was expressed by British exhibitors as NCC closed on Thursday.

Microcomputers attracted plenty of attention for its Black Box microcomputer and planned to return next year. Lynwood Scientific was also set to return, saying that it exhibited its micro-controlled display terminals mainly to make contact with possible US maintenance organisations.

Grundy and Partners was overwhelmed with inquiries about its new approach to data entry, the Truedata terminal consisting of 256 light emitting diodes addressed by light pen masks, which can be anything from a pair of glasses to a survey map, and the terminal responds to inquiries made with the light pen on part numbers, prices or other data.

The fact that the Truedata computer was damaged

in transit so that when it was first switched on one of the integrated circuits burned right through its package damped visitor enthusiasm not at all.

Case took place to make the first US presentation of the MSX message switching system which now represents some 50 per cent of the company's business. It is operating out of its 280-based boards for systems builders. It says that the first attraction of the CAP product is that it demonstrably works and runs on Mostek's hardware.

Sintrom, looking for OEM customers for its D-300 tape cartridge drives and formatters and its intelligent plotter controller, claimed a fair measure of success, adding that it may have to manufacture in the US to reach the end-user market.

Newbury Laboratories, too, is considering licensing a US company to manufacture its display terminals.

CIS Cobol systems (see front page) attracted at least 20 firm inquiries and a great deal of enthusiastic interest on its stand in the Personal Computer Fair.

CAP-CPP Inc was represented on the Mostek stand, a company which has just adopted CAP's MicroCobol as the first fully-supported high-level language on its 280-based boards for systems builders. It says that the first attraction of the CAP product is that it demonstrably works and runs on Mostek's hardware.

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British exhibitors well satisfied

A unique opportunity to assess the latest American Computers and Peripherals

You are cordially invited to visit the US Trade Centre, during the week of June 19-23 Assess and investigate the latest American Computers and Peripherals at a major exhibition to be held at the United States Trade Centre, 4/5 Langham Place, London W1. The exhibition will include exhibits of the latest advances

In Computers and Peripherals from some fifty leading American manufacturers in the field.

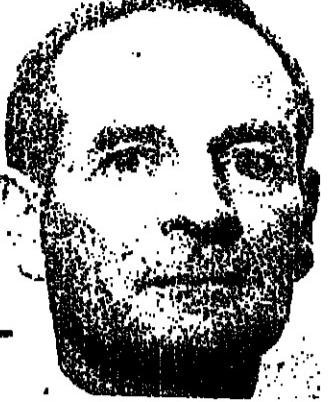
Refer to this special preview for outline information on the exhibitors and their products. Entrance is free to readers of Computer Weekly — just register at the door.

PARTIAL LISTING OF EXHIBITORS AND THEIR PRODUCTS

Advanced Electronics Design Inc. will be exhibiting Magnetic Disc Systems, Floppy Disc Systems, Floppy Discines, Cartridges and Discs.	EFCO will be exhibiting Paper Tape Readers and Paper Tape Punches.
UK Representative: Jacquard and Harris Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 5551	UK Representative: Jacquard and Harris Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 5551
Amesys, Inc. will be exhibiting Magnetic Tape Drives and Dics.	Floating Point Systems, Inc. will be exhibiting Floating Point Array Processor.
UK Representative: S.O. Data Systems Ltd, Maidenhead, Berks Tel: 0828 38628	UK Representative: Floating Point Systems SA Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 50182
Anderson Associates, Inc. will be displaying Printer/Tape Terminals.	Futuredata Computer Corp. will be displaying Microcomputer Support Systems.
AJ211 Acoustic Couplers, Dot-Matrix Terminals.	UK Representative: I.S.G. Data Sales Ltd, Maidenhead, Berks Tel: 0398 31828
Anderson Associates Ltd, Shepperton, Middlesex Tel: 0837 44438	Futuredata Computer Corp. will be displaying Printers, Magnetic Tape Drives and Peripherals.
Atlanta Research Corp. will be showing Line Protocol Analyzers with Interface, Serial Alarms Monitor, Bus Data Link, LAN Interface, Packet Switching, Remote Control Switching Systems and Terminal Testers.	Q.T.C.O. Corp. will be displaying Video Data Tables/Grid Digitizer, CRT Terminals and Data Cartridge Storage.
UK Representative: Atlanta Research Corp., 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 1118	UK Representative: Q.T.C.O. Corp., 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 1118
Atmospheric Research Corp. will be demonstrating Servomotors, Tachometers, Encoders, Stepper Motors.	Gannet Electronics will be demonstrating Terminal Line Printers.
UK Representative: ATM International, Inc., 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 28267	UK Representative: Gannet Electronics Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 28267
Atmosphere Data Communications Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 28267	Clifford Precision, Luton Systems, Inc. will be demonstrating Servomotors, Printer Terminals, Line Printers and Magnetic Tape Drives.
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Atmosphere Data Communications Ltd, 102 Grosvenor Gardens, London SW1W 0AA. Tel: 01-521 282	

PEOPLE

Sir Rex appointed to the IBM board



THE vice-chancellor of Oxford University and Warden of Merton College, Sir Rex Richards (left), has been appointed to the boards of IBM UK Holdings and IBM UK.

A distinguished scientist, Sir Rex was knighted in the Silver Jubilee Honours for his work on nuclear magnetic resonance. He has been a member of the Councils of the Royal Society, the Chemistry Society and the Faraday Society.

He was made a Fellow of the Royal Society in 1959 and received the Royal Society Davy Medal in 1978. He is the first scientist to have been appointed vice-chancellor of Oxford.

Sir Rex Richards

Irish BETA officials

OFFICIALS of the Irish Business Equipment Trade Association, IBETA, have been elected for 1978-79. They are:

President, John Campbell, Rank Xerox (1); Vice-president, Aidan McKenna, Memory Business Machines; hon secretary, Ted Cantwell, Regent Typewriter (I); hon treasurer, Louis Johnston, Dublin Office Equipment Co; PRO, Brian Grant, IBM Ireland; administrator, Jack Simpson.

Derek Blackston, previously central accounts senior territory manager with Redifon Computers, has joined Infotex as a senior sales manager.

Dave Bennett (extreme right) explains the workings of a CMC Key Processing System to members of Cumac, the CMC Users' Association, at the Open Day held recently at CMC's headquarters in Hemel Hempstead, Herts. (Left to right) Alan Fitch, Haven Computer Services, Nigeler, Roy McKenzie, Johnson Matthey; Ann Meek and Cumac chairman Jack Squires, Mann Egerton; Dave Groome, Alpha Numeric; Peter Avery and Colin Edwards, Hooskyns; Cumac secretary Bob Foster; and Mary Bicknell and Sally Stevens, Legal and General.

Len Barons, a director of wire-makers Johnson and Newpher (Non-Ferrous) of Sheffield, has been appointed to the board of GMS Computing.

Michael Toomey, formerly operations manager with UCC Datacom in Leeds. Previously he held a similar position with Adler.

John Clark has become president of Itel's data products group in the US, of which he was formerly executive vice-president, and has been elected a vice-president of the parent corporation. He assumes operating responsibility for the group from Richard Lussier, executive vice-president of Itel, whose responsibilities have been extended to include the air and equipment management and the data services groups, as well as the data products and financial services groups.

Among those reporting to Clark is the president of Itel International, Joseph Foster.

Derek Hoffmann, general manager of Kina Applied Technology, has been appointed to the board. Brian Beets has been promoted from marketing executive to marketing manager, and Gerry Hughes, lately of Foxboro-Yokogawa, has joined Kina as a marketing executive on computer systems.

Paul Martin joins Logabax as a senior sales executive for the City and North London. Previously he was with Univac in a similar capacity.

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NEWS IN BRIEF**PO £2m order for Marconi**

THE Post Office has placed an order valued at about £2 million with Marconi Communications Systems of Chelmsford for the supply of 300 bps modems to be used in the Datalink 200 service.

The U1108 modem is a single card which can be supplied either in a box with a power supply or rack mounted with a built-in power supply and up to six boards to a rack.

30 more terminals

THE Alliance Building Society's online branch investment and mortgage system is to be enhanced with the addition of 30 Transdata 313 printer terminals, worth £25,000. They will be used at branch offices in conjunction with VDUs linked to a Burroughs 86700 at the society's headquarters in Hove, Sussex.

Explosive

A BURROUGHS B1700 system has been installed by Nobel's Explosives, a subsidiary of Imperial Chemical Industries. The £70,000 system will be located at Nobel's Ardeer head office, and is to handle local processing and standard Hasp communication with an IBM 370 system.

Time sharing

ADDING to its IBM mainframe service, computer bureau Southwark Computer Services is offering an interactive time sharing service based on a Digital Equipment PDP-11/70 minicomputer operating under RTSS/E Level 6. The service is aimed at software houses requiring program development facilities and at relatively inexperienced computer users.

Tally range

NEW UK distributor for the Tally T1612 serial buffered printer, Computer Marketing, is now able to offer the full range of Tally line printers and terminals, largely on an ex-stock basis, with full contract maintenance.

Philips installation

TO cope with the growing volume of invoices and other accounting routines, the R. H. Freight Group of Nottingham has installed Philips Data Systems PALO business system.

Free brochure

A FREE six-page brochure has been published, detailing the services offered by the Engineering Mechanics group of Atkins Research and Development of Epsom, Surrey.

Scicon system will cut British Steel Corp production costs

SIGNIFICANT cost savings are expected to be made by BSC Stainless, part of the British Steel Corp, in the production of stainless steel at two of its plants which are now using a computer system developed jointly with Scicon Computer Services.

BSC Stainless has already invested over £90,000 in the project, known as Least Through

Cost Mix, and the system is field, access the system via on-site VDUs linked to Scicon's two Univac 1108 computers at its bureau installation in Milton Keynes.

LTCM is a simpler method of working out the most cost effective "recipes" for varying grades of steel. BSC staff at the two plants, Panteg in South Wales, and the new £50 million facility at Tinsley Park, Shef-

field, access the system via on-site VDUs linked to Scicon's two Univac 1108 computers at its bureau installation in Milton Keynes.

Development of the LTCM system took about a year, and the software is based on Scicon's mathematical programming system Sciconic, and is sup-

ported by a wide range of commercial software including MGG, Scipio, and Special Fortran enhancements.

It is likely that after another year or so of using the system, BSC Stainless and Scicon will specialised application to other interested parties in the steel industry.

US-Europe public electronic mail by the early 1980s

A TRANSATLANTIC electronic mail service by satellite between the US and Europe could be in operation by the early 1980s, now that discussions are under way between the US Post Office and its postal authorities in the UK, France and West Germany. If problems like compatibility of equipment ironed out, a month-long demonstration will take place in February or March next year, followed by a one-year field trial. This will involve the Intelsat satellite.

Meanwhile, the development of a domestic electronic mail network by the US Post Office by Versatec, the electrostatic printer/plotter manufacturer. It has reached the stage where special transmitting and receiving equipment has been tested.

The equipment includes a very high speed facsimile type scanner for transmitting letters, and a high speed printer for the receiving end which reproduces each letter page on to A4 size paper. The pages are then automatically folded and error-detection capabilities plus a software system which places special emphasis on file handling, realisation and data protection capabilities.

The high speed printer was developed for the US Post Office by Versatec, the electrostatic printer/plotter manufacturer. It handles 8½ inch wide paper, printing 8½ inch wide A4 pages on their sides at a rate of 175 inches, or about 20 pages a second.

This print speed, equivalent to about 80,000 lines per minute, is far faster than any electrostatic printer that is now available commercially. But it was not difficult to achieve, according to Versatec, because the speed of electrostatic printers is kept down in practice only by the inability of computers to feed them with information fast enough.

One of the biggest problems to be overcome before this public electronic mail system can go into live operation will be getting permission from the US government and approval from the general public for private mail to be opened and scanned in the Post Office at the transmitting and printed out at the receiving end.

Initially running under DEC 2900 will be used to implement the society's new management control system which treats each of the 600 outlets in the London area as a separate cost centre.

The system will also cover Co-op bakeries, farms and funeral service.

PDP-11/34 minis for Tote

AFTER a detailed study of how to computerise its on-course business, the Horserace Totaliser Board has decided to acquire six mobile systems, each based on two Digital Equipment PDP-11/34 minicomputers and supplied by Gamma Associates.

The six systems will be moved around the country along with 400 ticket issuing terminals manufactured by Control Systems of Oxford, which will also install and commission the systems, having been appointed as the prime contractors.

At one time General Automation looked like supplying the Tote systems but its contract was cancelled early last year (CW, March 31, 1977).

PROM agency

THE PROM programmer and simulator produced by ITT Components Group is now available through Rapid Recall. It has the ability to "blow" most of the popular programmable memories, and in addition eliminates the requirement for a teletypewriter or video display in target system development and debugging.

Apart from Gamma Associates, some of the other sub-contractors include SEN

and Pitney-Bowes.

The PROM systems will be used to calculate dividends and cash winning tickets and will be able to handle win, place, combination and multiple bets of any value.

Experts in the areas of research and practice are discussing and analysing topical DP problems at two congresses in Berlin. Separate, but simultaneous, interlocking events of this kind foster understanding for the problems of the other side and help to arrive at joint solutions.

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The value of Loglan as a useful tool in machine translation

EVERYONE has heard of Esperanto, and many people speak it. But few people have heard of Loglan, and even fewer speak it. Why then might it be useful, particularly in the field of machine translation? An examination of some of its features reveals that it goes some of the distance in meeting the requirements of an Intermediate Text Language for translation, though it still has some way to go.

Loglan was started about 1955 by James Cooke Brown who was a social psychologist on the faculty of Florida University. His aim was to test a hypothesis of a linguist named Benjamin Whorf, that "the structure of the language spoken by a people determines their world view; that is, it sets limits beyond which that world view cannot go."

His aim was to invent a language based on predicate logic so that when people could speak it and even think it one could then discover whether their world view was changed by the process. In an early article in *Scientific American* (June, 1960), he disclaimed its potential as an international language.

However, by the time he published Loglan I (third edition 1975), he suggests that "incidental features such as whether a language is easily learned or not, or speakable by computers, may well turn out to be decisive. Loglan, or some other mechanically-apt tongue, might very well be ripe for that!"

It is this minor aim of a

language useful for computer use, that is considered in this article. In particular, the issues of meaning and inference are among the liveliest issues in natural language processing today.

For example, Roger Schank of Yale states, "Five years ago, or so, our research was concentrated on finding an adequate meaning representation for sentences. We then began to run into problems of inference. Even if we could analyse sentences for their meaning we did not know

that there was intrinsic interest in this context.

An example of written Loglan, with a word for word English translation and idiomatic translation will give some idea of what the language looks like. See Figure 1.

In Loglan there are only three parts of speech: (1) Structural words, (2) Predicates and (3) Proper names.

All the descriptive words of a language — nouns, adjectives, verbs, etc. — are grouped under the title "predicate" and are treated exactly alike. The struc-

ture of Loglan is taken from James Cooke Brown's article in *Scientific American* (June, 1960) with a word by word translation of the second line, and the English original on the third line. A few changes have been made to reflect updates to Loglan since 1960.

Currently half-way through a PhD course at the Imperial College of Science and Technology, Chris Moss' research is centred round logic programming. He has also spent five years as a programming consultant at Essex University.

By CHRIS MOSS

short for a man; that is, a short type of a man. What about blue houses? Can we expect them to be really blue? All over? Inside and out? Certainly not... they are blue among houses, not among skies.

Three and four place predicates are not so common but are useful for words like "sell"; "da vedma de di do" means X sells Y to W with price Q. The third and fourth arguments are simply strung along after the others.

The verb "to be" in English is regularly criticised by logicians and has no equivalents in Loglan. To say "he is a man," one simply says "da mrenu," which conveys no implication of tense. To add the idea of "now," one uses the word "na". Since there is no conjugation of words in Loglan, this is kept as a separate word, as are the words for past, (pa) and future (fa). See Figure 2.

The diversity of English expressions which mean the same thing or have subtly different meanings logically is one of the difficulties of most languages which, in theory, is eliminated in Loglan. Another example is the use of the definite article "the" in English. There are three words in Loglan which have this function:

le—describes an object,

la—starts a name,

lo—is used in an abstract or collective sense.

Structural words are the most common in any language including Loglan, so they are all short — essentially monosyllables. Predicates have at least two syllables and end in a vowel. Names have two syllables or more and end in a consonant. It is thus trivial to parse a sentence in written form, and the same care has been given to the conversion from spoken to written form, which is of relevance for voice recognition equipment.

A predicate, in logic, is a description of a state, an action, a quality, etc. Thus, if one wishes to assert that "X is blue, one asseris: Bluo (X).

In Loglan one asserts this as: "da blanu"; where da stands for the universal pronoun (he, she, it, etc.) and blanu for blue. Since there are degrees of blueness we may say that one thing is bluer than another. In fact, blanu is a two place predicate in Loglan, so "da blanule" means "X is bluer

than Y."

There are actually five words for "it" in Loglan—da, de, di, do, du — and they have the same function as variables in logic. One normally uses them to refer to objects previously mentioned in the conversation: da for the last object, de for the last but one, etc. Once used, they keep one's place within the context.

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short for a man; that is, a short type of a man. What about blue houses? Can we expect them to be really blue? All over? Inside and out? Certainly not... they are blue among houses, not among skies.

Three and four place predicates are not so common but are useful for words like "sell"; "da vedma de di do" means X sells Y to W with price Q. The third and fourth arguments are simply strung along after the others.

The verb "to be" in English is regularly criticised by logicians and has no equivalents in Loglan. To say "he is a man," one simply says "da mrenu," which conveys no implication of tense. To add the idea of "now," one uses the word "na". Since there is no conjugation of words in Loglan, this is kept as a separate word, as are the words for past, (pa) and future (fa). See Figure 2.

Figure 1

An example of Loglan

le narmi gilda grupa certi pa sedho
(the army guide group chief [past] say
The chief of the group of army guides said

koko da pa nu pluci po sedho
(that) it! (past) (passive)please(-ing) say
that he was pleased to say

ko da papaca snzno le ri fekto...
that it! (passive) know the(many)fact(pause)
that he had known the facts for a long time.

Il ia no de mandu mi lu da pa forli sedho
(quote)certainly it! (deceive me)(unquote) it! (past) strong say
"they certainly did not deceive me" he said forcefully

Il nu nie de pa trati lu e pa
(quote) (passiv) however it! (past) try (unquote) and (past)
"even though they tried" and

djori seminim de pa lakso vi le vu
order 700 it! (passiv) flock here the (few)
ordered 700 of them locked up in

kruuma po de
kroom of it!
their rooms

The above piece of Loglan is taken from James Cooke Brown's article in *Scientific American* (June, 1960) with a word by word translation of the second line, and the English original on the third line. A few changes have been made to reflect updates to Loglan since 1960.

Figure 2

YOU

English is major source

DR R. Mankin (Letters, April 13) in discussing the choice of an Intermediate Translation Language, labels languages quite rightly, of course, as "living languages".

I would qualify this a little, however, because to the vast majority of people there is only one "living language" — that is the one they individually use every day for all purposes, among their friends of the same nationality and locality.

Any other language is a "learned" language, quite distinct from their own living language.

With a "learned" language,

unless you happen to emigrate or live for a long time in the country in question, you can never feel for the language as one does for one's own, but all

the people you are speaking with are speaking their own living language and there is thus a feeling of inequality.

With the language Esperanto, we have a language that has been learned by each user and therefore there is no feeling of equality. In my own ex-

perience of over 45 years of using Esperanto with many friends abroad, and the euphoric and expressive nature of the language, this feeling of equality is very strong, to the extent that the mutual feeling for the language makes it into a true living language.

Indeed, the taking part in large international conferences where Esperanto is the only language spoken, and experiencing the spontaneous audience reaction when the speaker makes a purposeful, or a witty, or even a poignant remark, makes one wonder what adjective can describe the language Esperanto if one does not use the word "living".

Dr Mankin says that if "our Intermediate translation language ever becomes widely used it will promptly diversify into many dialects... and generally disqualify itself from use as an ITL". What Dr Mankin has not taken into account is that Esperanto will never become a replacement for national languages and be used locally, and will thus never produce dialects.

Some Esperantists are currently organising the systematic checking of translations by means of Esperanto. Where this document is translated into several languages, how can it be independently checked that each version gives identical information to each reader?

The true meaning of each version can be discussed between Esperantists of each nation concerned, and any differences ironed out. This seems to me to have similarities with the idea of an Intermediate Translation Language.

J. A. BRISCOE
Harrogate

Readers should note that correspondence on this subject is now closed.

Strong feeling of equality...

I HAVE followed with some interest the letters concerning the choice of an ITL. Most of your correspondents assume that such a language is necessary. I would question whether the whole concept of machine translation is worthwhile in any practical sense.

In practice

most users of

translations have specialised needs. The translation requirements of legal documents, novels, poetry and scientific texts, for example, are very different. There would be little point in devising a general program to translate these. Even in any single area it would be unwieldy, long, complex and still prone to error. In fact it would still also need translators for checking purposes since both hardware and software are insufficiently reliable even if an acceptable program could be written.

In many ways the situation is analogous to the software house which produces an operating system, database management system, report generator or TP monitor by starting from an idea and then implementing it. When challenged, they will naturally assure you that they consulted "the users" (real or potential) and implemented the system in accordance with stated requirements. In practice many such a package has solved a theoretical problem perfectly, but very few people's real problem is being produced they would not be eliminated. If we cannot escape the need for human translators it is hard to concentrate on ways to improve their efficiency.

If the full matrix of translators

were required then I should

agree that an ITL would provide

the best approach (though I

should still argue against Esperanto as the best choice). However, I see English not as an ITL, but as the major source and target language, without the need for an ITL.

One final point: I should like to thank the anonymous donor

who sent me a pamphlet about

Esperanto. I have a great respect for that language and for the ideal which it sets out to fulfil, and I have never denied its value; my objection to it is solely for its use as an ITL.

P. G. SEBBORN

Harpenden, Herts

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Datasolve House, 99 Staines Road West, Sunbury-on-Thames, Middlesex.
Telephone: (076) 85566

Esperanto lives

AS a teacher of five languages, including some of those mentioned by Dr R. Mankin (Letters, April 13), I would like to make some observations on what he had to say about a possible Intermediate Translation Language (ITL).

He is wrong to suppose that if such a language became widely spoken, as Esperanto is, it would diversify into dialects, develop irregularities. This simply has not happened with Esperanto. Its creator allowed for both growth and control, the latter by an academy of accomplished linguists, and one of the strengths of Esperanto for use in the international field generally is its standard form, compared with say, English, which has indeed diversified into dialects.

He writes as though an artificial language must be a dead language. This isn't true at all in the case of Esperanto. My

argument is that it is an artificial language which has planned its structure in the sense that it was designed with skill or artifice, but it is not in the people's natural language.

RAF MARKARIAN
Loyola High School,
Loyola, E. Sussex.

Figure 2

Figure 3

le mrenu	the man (or a man)
la mrenu	Man, or men
la blanu	John
lo blanu	the blue object
lo simba	blue (the colour)
lo simba	the lion
lo simba	lion, lions, the lion

Figure 3

Thus "pretty ge little girl" means "a little girl who is pretty," while "pretty ce little girl" means "a girl who is pretty and little."

This doesn't exhaust the possible ambiguities. Does the phrase "red and blue ball" imply that the ball is red, and that the ball is blue? No, the common interpretation would be that the ball is a mixture of red and blue.

Thus Loglan has yet another connective "ze" for the possibility that the ball is a mixture of red and blue.

In conclusion there are many constructs — for explanations,

The problem of finding suitable sales staff

IT has been apparent for some considerable time that the availability of competent salesmen with a proven record of sales success within the computer services industry is extremely limited.

The reasons are basically simply:

1. Salesmen need to have very special reasons for leaving one bureau to go and work with another for much the same rewards. Such apparent justifications as more effective management, broader product range, success conducive environment, greater personal freedom, greater potential rewards, etc., are somewhat amorphous and mean much more to management inside, than candidates outside. Such intangibles are regarded with suspicion by potential recruits, and generally represent insufficient justification for returning to the hazards of the "commission trough".

2. The emergence of the microcomputer, with its demand for commercial applications expertise, has created an attractive diversion for successful salesmen within the services sector wishing to advance their income and experience.

3. The computer industry, with the exception of some mainframe manufacturers, is by and large not investing in the growth of new sales people, yet at the same time individual sales forces are being expanded in order to sustain very high growth rates. This has resulted in an incestuous situation where companies are "poaching" staff from each other and at the same time making it possible for the most incompetent sales personnel to survive.

Salesmen usually change jobs for one of four reasons: enhanced status; greater assured income; widening of product experience; and greater career prospects.

Of these, the first two are far and away the most typical. Other justifications such as personality clashes, personal politics, company policy, etc., are often as not excuses for personal failure.

Frustrating though it might appear from the point of view of the computer services sector, it may well be that it could have to resign itself to becoming the training ground for the industry as a whole, i.e., the point of entry via which salesmen can move into the total computer industry. If this is so, then the implications of a constantly moving sales population will have to be accepted and managed accordingly.

In this context, and from the point of view of its own increasing needs, it is essential that typical "stop-go" recruitment is replaced by an ongoing recruitment strategy for the location and training of new personnel. Implementing this situation is the test for management to understand and accept the need for ongoing training and

the related increase this will bring about in sales costs.

There are undoubtedly many men and women within the computer industry who have much experience of computers and applications and would be attracted to selling as a career. However, it is likely that the people most likely to succeed are those who have already proved their ability to establish a good working relationship with end users.

While some successful salesmen have come from an operations background, people from this environment tend to be remote from the client's actual applications problem, i.e., they understand tools rather than applications solutions.

Sales support analysts are a more obvious source of good material, for by the very nature of their function they are constantly exposed to client situations, proposals, presentations, general communications and so on.

The location of sales recruits from outside the computer industry is a function of one or both of two disciplines: selling skills and applications expertise.

The best medium for the location of personnel already employed within the computer press. The speed at which advertisements can be placed is four to six times faster than the national press. The cost can be seven times less than that of national newspapers. Response can be good, but like all advertising, is a direct function of the precise nature of the job and the availability of directly compatible personnel. Any advertisement can be worded to give a heavy response without attracting the right applicants.

For the location of people outside the industry, there are two principal journals, The Sunday Times, and the Daily Telegraph. By and large, people who read the job advertisements in the Sunday Times do so for reasons both of need and interest. Certainly, active business people by and large, have more time for reading newspapers on the weekend than during the week.

Many companies turn their back on the recruitment of sales trainees because they see them

in terms of both company promotion and candidate response. The use of anonymous advertising via a recruitment agency should be limited to situations which might indicate a company failure, cause problems with existing employees, or repeat a failed recruitment exercise. For this reason, it is important that the client's marketing department

who read the similar columns in the Sunday Times do so for reasons both of need and interest. Certainly, active business people by and large, have more time for reading newspapers on the weekend than during the week.

Many companies turn their back on the recruitment of sales trainees because they see them

By Alan Williams

of Sales and Marketing Recruiters

Alan Williams is a director of Sales and Marketing Recruiters, part of the Sales and Marketing Services Association of Companies, providing market research, sales training, product promotion, and recruitment services to the computer industry. He has previously worked in sales and marketing with Unilever, Firth Cleveland, IBM, Control Data and UCC.

then continues until the total sales cycle and the appropriate product portfolio have been completely covered.

This type of training programme is not ad hoc. It is a planned commitment which is phased to match a consolidated recruitment strategy. A typical training cycle might cover a period of six to 12 months during which time each salesman will have undergone 30/40 days of formal classroom training. This would also be augmented by field-sales guidance, supervision and evaluation provided by the company's own sales management.

The costs related to the training aspects of such an exercise have to take into account both the preparation of the training programme which typically includes both standard and customised modules, and actual classroom presentation. Clearly, there is a wide range of cost depending on content, duration, class size, number of instructors, and more particularly the benefits of effective selling and hard work.

It may well be that many service and hardware companies continue to limit recruitment to experienced computer salesmen because they do not have the resources to train or time to recruit newcomers. If this is the case, then consistent failure to recruit the quality of salesmen they require may yet persuade them to invest in growing their own. In this case, the usage of an external organisation such as Sales and Marketing Services, which can handle both recruitment and training, makes for a more efficient and cost-effective solution.

The best vertical training approach used by Sales and Marketing Services relates selling skills to a particular product or range of products within a specific marketplace or industry. All sales and product training is locked into that.

As a net loss for at least the first year of employment. Those who do also tend to think of the salesman as someone who sells all the company's products to the total marketplace. It is not necessary for the salesman to be fluent in his company's total product portfolio to achieve sales success.

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with any one of its consumers, or of its 105,000 retail and service suppliers, Barclaycard therefore appeared as a split personality of no particular fixed address.

It was decided to change to a new system of "mustering" cardholders into groups of about 200,000 apiece, all of whose ex-

periences were similar. That, by the way, is not another spelling mistake. It is a way of breaking down jobs into series of fundamental operations, each consisting of a "stimulus" and a consequent "response". The stimulus of a telephone buzzer elicits the response of raising the receiver, and heavy breathing at the other end provokes, "Is that you Bert?", and so on.

Not only advanced technology, but progressive education as well, I thought. But the embarrassed silence was cut short by Mike Webb, the man responsible for plugging the company's staff training into its central computer last year via IBM's interactive Training System.

"I don't care a damn about that," he said. "It's not ITS. It's us. The important point is that within four months we had an efficient and economic training system using ITS. We'll finish tying up our course programs before long. Meanwhile, if accidents like that give students a giggle, to what?"

The course over, the trainers sorted out the tasks involved in the company's six main grades of clerical work.

"We found we should have done it long before," Webb commented. "The task analysis helped us a lot in itself. For instance, we had always assumed that the lowest two grades were identical. The analysis showed that while they were similar in some ways, there were several important differences."

"For training under the old functional organisation, we could rely heavily on pitching people into the working departments to learn the job skills by practising them under supervision — what's known in the training world as sitting next-to-Nellie," said Webb. "You see, when you have 200 people in a department, by law of averages you will have about 20 who are born 'Nellies', both blind and able to teach trainees how it's done."

"But there just wouldn't have been enough 'Nellies' to go round when it came to training on the musters. For one thing, there were to be only 35, or thereabouts, at most, in each group. For another, they by and large all had to learn to carry out new tasks, and since most jobs here involve direct access to active files on the computer, if a task is done wrong the odds are that something real will happen like tripling a slow-payer's credit."

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and as spring turned to summer last year Barclaycard flushed on and promised the watching audience: "At the end of this training session you will be able to change names and addresses ACCURATELY."

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The dynamic software development group of a U.S.A. computer manufacturing company now require a manager to take over part of the current project team. The work is technically orientated involving the operating systems and communications aspects of mini-computer processing within terminal networks. Candidates must have proven management experience, be highly communicative and have the flexibility to handle all the duties associated with new product development. A heavy software background and ambitious aspirations are essential.

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Basildon

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For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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Two Systems Analysts (Up to £5,500)
Job: Systems development at business specification level and subsequent implementation of new systems
Our requirements: Education to degree or 'A' level standard, five years DP experience, two as analyst. (Good background at business systems level).

Senior Programmer (c. £5,000)
Job: Advising on computer system design.
Our requirements: ICL 1900 COBOL experience using George 2, 2+ or 3. Communications background (e.g. DRIVER). Knowledge of database and structured programming helpful.

Computer Operators (up to £3,000 including shift allowances)
Our requirements: Age at least 20, educated to 'A' level standard. Minimum of one year's operating experience on disc based ICL 1900 using George 2 or George 2+.

In addition to a good salary we offer excellent fringe benefits.

Please apply quoting reference No. HO/24 to:

Miss J. E. Berry,
Personnel & Training Manager,
UK PROFOUND,
Drumlin House, New Street,
Salisbury, SP1 2QW, Wilts.



Applications are invited for the following posts:
Faculty of Business — Banking Precinct
Department of Systems and Computing

**Lecturer II
Business Administration**

To teach in the field of business administration, organization, or policy. Some knowledge of computer applications would be an advantage. Applications should be submitted with an interest in new developments in teaching methods and in part-time education

(Ref. S/BE 118)

**Lecturer II
Systems and Programming**
Applications for this post should have recent commercial, industrial or teaching experience in Operating Systems and Programming in COBOL. Applications should be held and experience of ICL 1900 series would be an advantage

(Ref. S/BE 1188)

Salary Scale: Lecturer II: £4,101-£8,558 per annum (Plus applicable London Allowance)

The above posts are available for appointment as at 1st September, 1978. Further details and application form from

The Senior Academic Personnel Officer (2)
North East London Polytechnic
Forest Road, London E7 4BY
Telephone: 01-532 2372 (Extension 20)

Closing date: 30th June, 1978.

Applications invited for the following posts:

Faculty of Business — Banking Precinct

Department of Systems and Computing

To teach in the field of business administration, organization, or policy. Some knowledge of computer applications would be an advantage. Applications should be submitted with an interest in new developments in teaching methods and in part-time education

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Faculty of Business — Banking Precinct

Department of Systems and Computing

**HAYWARDS HEATH RECALL - HUTTON
SOUTH WALES
MEDICAL APPLICATIONS
UNIQUE CAREER OPPORTUNITIES
MIDDLESEX & S. HERTS**

Revolutionary portable software - Advanced processors

Dedicated hardware - Micro-processors - Medical imaging - Interactive data processing.

If you are a COMPUTER SCIENTIST, PHYSICIST, MATHEMATICIAN, SOFTWARE ENGINEER or REAL-TIME PROGRAMMER and are interested in the above areas, this could be for you.

We're looking for technical excellence and our clients are willing to pay for it. For example circa £5,500 for about two years' experience in such areas as MEDICAL RESEARCH, RADAR, AEROSPACE, SIMULATION, PROCESS CONTROL.

You'll join a closely-knit high calibre team creating technology packages in the context of medical imaging.

You'll get total job involvement and the opportunity to be innovative in a wide range of advanced software and hardware developments.

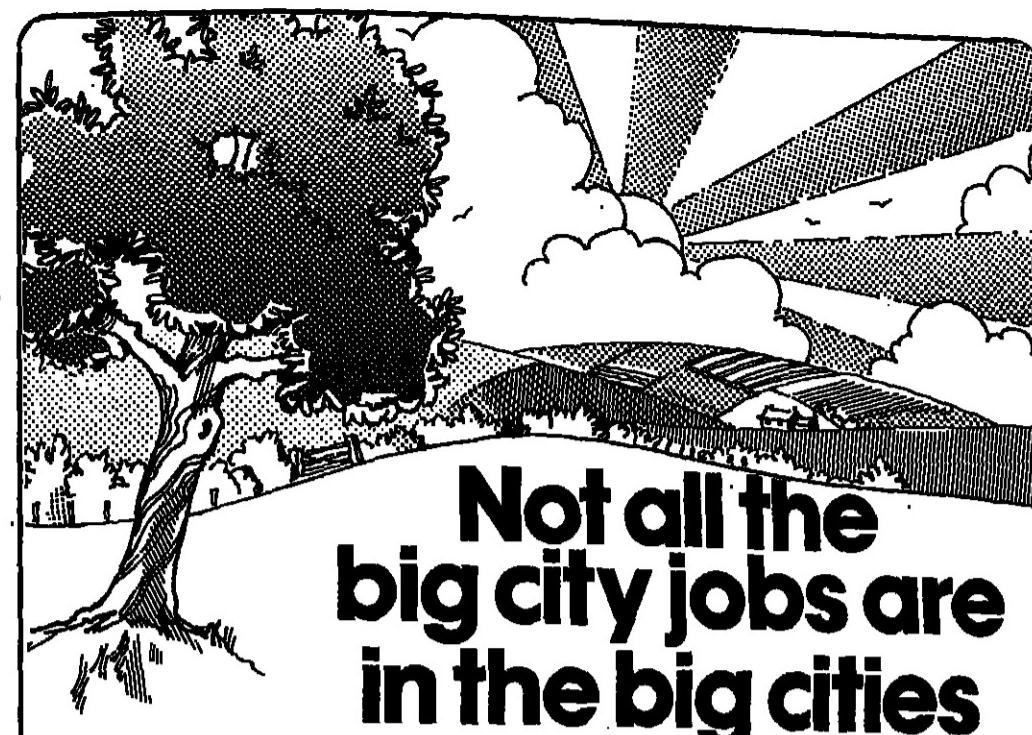
You'll have all the benefits and security associated with a large group acknowledged as world leader in advanced medical applications.

Find out more about how your career can develop in this diverse and rapidly expanding field by contacting MARK IRENS for a confidential discussion.

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**Not all the
big city jobs are
in the big cities**

We offer interesting work, an excellent salary with real career opportunities, 4 weeks' holiday after your first year and a 32½ hour working week.

We also offer real trees, green fields and country pubs - with Brighton just 15 minutes away on a fast train.

CDP is the computer centre for IPC Business Press Ltd., arguably the largest publisher of business journals in the world. Our work involves the use of database, on-line and other techniques in the service of publishing, subscriptions, typesetting, accounts...

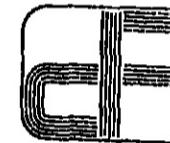
Our offices in Haywards Heath are in a modern building two minutes away from the station. Just a few minutes more and you're into some beautiful country (When we say our grass is greener, we mean it.).

Currently we're looking for
Systems analysts and Programmers

Salary to £5,700 p.a.

Please ring or write to Sally Lulham,

Computer Data Processing Ltd.,
Perry Mount Road, Haywards Heath, West Sussex.
Tel: Haywards Heath (0444) 59188.



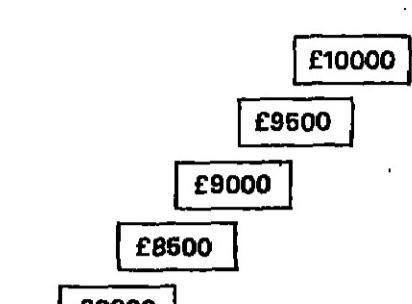
**WHERE DO YOU
FIT IN AT CMG?**

As one of Europe's leading computer service companies we are always in need of more good professional staff with a minimum of three years systems and programming experience.

We offer excellent salaries, benefits and working conditions and there is a tremendous variety of work. Promotion is rapid and is determined purely on ability.

Please write or phone for an application form to:

Janet Gotherd,
CMG (West End) Ltd.,
Sunley House,
Bedford Park,
Croydon, CR0 2AP.
Tel: 01-688 8251



MAKE A MOVE TO COVENTRY

"SYSTEMS AND PROGRAMMING OPPORTUNITIES"

Our client a major manufacturing company based in Coventry wishes to recruit the following D.P. staff to augment their existing team.

At present the company are using a Univac 9070 running under O.S.4. Later this year a second machine will be delivered operating under V.S.9.

They are presently involved in the complete redevelopment of several of their major systems, using on line V.D.U.'s.

Training courses are available for candidates without Univac experience.

PROJECT LEADER to £5650

- At least four years' commercial systems including Production Control
- The ability for solving business problems
- Able to motivate and communicate effectively

SENIOR ANALYSTS c£5000

- Two years' commercial systems
- The desire to progress into systems
- Knowledge of on line techniques

PROGRAMMERS c£4500

- At least 12 months COBOL
- The desire to progress into systems
- The ability to work in a team environment

Contact: Graham Aston, M.E.C.I.

MARTINS COMPUTER SERVICES

Fox Rock, Western Road, opposite Albany Hotel, Bognor Regis, Gloucestershire GL1 4HQ. Telephone 021-643 2111. 24 hour answering service. Evenings and weekends 021-643 0331.

We are now able to interview until 8.30 p.m. and Saturday morning by appointment.

Just in time

Large company benefits apply including: Flexi-time; Pension Scheme; Subsidised Canteen; Sports and Social Club; Relocation Expenses; Etc.

Although this company is situated in Coventry, it is easily accessible to the M6 motorway with low traffic holding delays.



Berkshire + Relocation

Our client is a U.S. multi-national producing and marketing a complete range of mini computers to scientific and commercial users. Growth is fastest in the commercial area, and in order to provide high quality software products and environments to commercial users, they are seeking additional Software Programmers to strengthen their development activity.

The European Headquarters of the company is located in Berkshire, including one of the two software development centres in the world. Their products are produced for the world market and, as might be expected of an organisation of this stature, professional standards are high and the working environment congenial.

The people sought will have approximately 3 years' software development experience at Assembler level and will have an unparalleled opportunity to enlarge their practical experience on compilers or data base systems. They will receive excellent fringe benefits and salary up to £7000.

Enquiries concerning these openings, please, to Tony Baker on 01-499 4501.

RW 24/5

★ Opportunity for Early Promotion ★

Our client is the UK subsidiary of an American company engaged in the manufacture of interactive terminals.

The parent company has a well established computing function, and the UK subsidiary is now about to install its first ICL 2903. As a result, they now wish to recruit a capable and experienced Cobol Programmer to handle the implementation of a wide variety of accounting applications, some of which will be based on systems operational in the USA, and others which he will create himself.

The company's DP plans envisage a continuous growth and development for at least 4-5 years, and as there are currently no plans to appoint a Systems or DP Manager, promotion prospects could be particularly good for the Programmer appointed.

In addition to practical programming work, there will be early involvement in systems design and you can expect to be working closely with the US computer operation in Texas.

Enquiries in the first instance by letter to Tony Baker on 01-499 4501

RW 24/6

hutchinson-seymour RECRUITING LTD

10 Dover Street, London W1X 3PH

Telephone 01-499 4501

DATA PROCESSING DEPARTMENTAL HEAD

A vacancy has arisen for the above appointment in our Electro-Data Processing Department.

It is expected that the appointed applicant will be able to develop programmes for the company, and create and analyse new programmes for parts of the organisation still in the process of computerisation.

The work involves general co-ordination of all E.D.P. requirements including, in some cases, liaison with Bureaux, although the company has intelligent terminals connected via direct line to the Mainframe Computer at our head office in Germany, which offer keybatch and interactive facilities.

During the process of development frequent visits to our parent company in Germany will be expected.

Apply our reference LNM, or telephone Windfield Row 4181.

POLYSIUS LIMITED THE BRACKENS LONDON ROAD, ASCOT

SECTION ENGINEER (COMPUTER)

£5,389-25,980

Guildford

For the Surrey Sub Unit of our County Engineer's South Eastern Road Construction Unit. Applicants should preferably be qualified Civil Engineers with Computer Operation experience to manage a small section controlling a batch terminal.

This is a temporary appointment for the duration of our motorway contracts initially for a period of two years.

Application form from County Engineer's Post No. 110, Highway House, 23 Chichester Road, Woking, Surrey, Tel: 01-946 1788, Ext. 215. Closing date: 28 June.

SURREY COUNTY COUNCIL

INNER LONDON EDUCATION AUTHORITY London College of Printing SCHOOL OF SCIENCE AND TECHNOLOGY

Senior Lecturer in Computer Technology and Information Systems

The Senior Lecturer is required from 1st September, 1978 or as soon as possible thereafter to lead developments in Computer Technology in the College.

This is a particularly challenging post to those who have the necessary drive and enthusiasm, both to be responsible for computing throughout the College and to identify and expand those areas of the College's work where computing is applicable.

The successful candidate should ideally be a graduate in Computer Science and/or a member of the British Computer Society and will be capable of teaching within Honours Degree programmes and furthering research in this area.

Appropriate industrial experience would be advantageous. Salary in accordance with Burnham F.E. Report E6081-E7085 (bar - £7572, subject to formal approval, plus £402 Inner London Allowance).

Further details of the post and an application form, returnable within 14 days may be obtained from the Senior Administrative Officer, London College of Printing, Elephant and Castle, London SE1 6SB, Tel: 738 8484 (ext. 227).

Doncaster Metropolitan Borough Council

FINANCIAL SERVICES

SYSTEMS & PROGRAMMING MANAGER

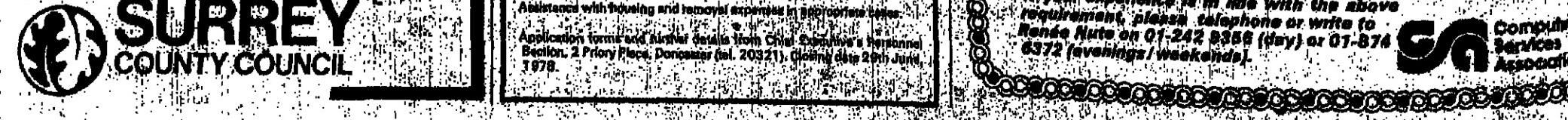
Post 154 24469-44320 (Int. 8320) department

To be responsible to the Deputy Data Processing Manager for all activities concerned with development and maintenance of computer systems, specifically those relating to the data processing functions. Applicants should be members of the British Computer Society or equivalent and have a minimum of 4 years' experience in systems programming together with experience in the control of staff.

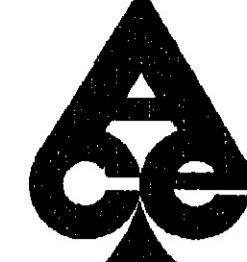
The duties of the post may subsequently be extended, pending the LAMFAC report.

Assistance with moving and removal expenses is provided free.

Application forms from County Engineer's Post No. 110, Highway House, 23 Chichester Road, Woking, Surrey, Tel: 01-946 1788, Ext. 215. Closing date: 28 June.



Accord Computer Efficiency LTD



Sophisticated HOLLAND Software

We are a recruiting company which has earned an outstanding reputation for high class software design and implementation in Europe. In return for your skills in any of the above sectors, we would like to offer programmers, analysts and consultants the following:

ON-LINE SYSTEMS

DATA COMMUNICATIONS

REAL-TIME SYSTEMS

DATABASE

MINIS

DISTRIBUTED NETWORKS

MICROS

TELECOMMUNICATIONS

MESSAGE SWITCHING

Technical and Scientific projects

Consistent career progression

Competitive Continental salaries

First class conditions of employment

Relocation paid, including family if applicable

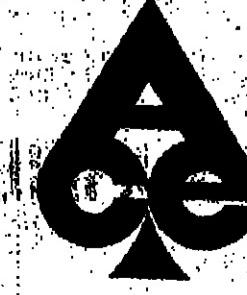
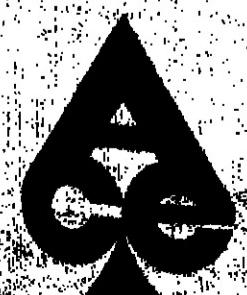
Projects currently engaged upon are extremely varied and comprehensive in terms of the use of mini-computers and involve interesting and often complex systems.

Telephone Bill Seymour or Andrew Ellis for further details regarding positions available, and background information about living in Holland.

Accord Computer Efficiency LTD

Bill Seymour, Portland House, UK Office,
UK Office, 4 Great Portland Street, London W1N 5AA England. Tel: 01-580 3754

Andrew Ellis, Sarphatistraat 36, Amsterdam, Holland. Tel: 020 254064/254062



International Small Systems Project Manager

MAJOR INTERNATIONAL BANK

Salary: Up to £8,000 per annum

Plus normal banking fringe benefits

We are specifically looking for someone with experience of NCR 299 and 399. Our client is a major International Bank installing a number of accounting systems throughout the world, covering such areas as the Middle East, India and the Far East.

We are looking for someone who has experience of the hardware manufacturer, who would enjoy working for a significant period of time overseas. You would be totally responsible for installing a package that has already been developed but may require some modification, and you will have to spend a lot of time working on your own. Therefore, you will be a self-starter, and not someone who has to constantly "refer to base" for instructions.

Your ideal background would be a data processing one, then banking but more important, experience of 299 or 399. Quite honestly, if you do not have the latter experience you will be wasting your time in applying.

The opportunities are very good indeed, our clients regard this as a training base for about two years and thereafter, promotion is almost certain if you perform well. You should be able to demonstrate between two and three years' experience of working on the relevant hardware. You will have been responsible for at least one series of systems and will be anxious to move into a larger data processing area which this position will eventually lead to.

The international travel aspect is either attractive or it isn't, you have to be prepared to "pack your bags" and go at short notice, therefore, if this is a deterrent this isn't for you. However, if you feel you have the drive, the tact (most important), enthusiasm and technical ability, we would like to meet you.

The fringe benefits are excellent, they include a low interest mortgage, free medical services, non-contributory pension and a subsidised luncheon.

Please apply to John Goldsmith, Ref. 1688/CW.



WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd., 15, Buckingham Palace Road, London, S.W.1.
Tel: 01-828 5356 - 24 hour answerphone service.

JOHN GOLDSMITH (Computer Recruitment) Ltd.

Software Engineering

Research & Development - Brighton

ITC Credit is a world-leader in the design and manufacture of teleprinter and data-transmission equipment.

As a major division of ITT Business Systems, Europe's largest telecommunications group, innovation and sophistication are the keys to our continuing success in this growing market. Which is one of the reasons why we invest heavily in software research and design for new products.

This is the environment we are offering to the Software Engineer - a man or woman - who joins us now. The team is young and highly talented, and you will be expected to match up on both counts. You will have individual responsibility for developing mini and micro-based software systems. So you must have two years' or more programming experience in Assembler, preferably with micro-computer applications.

Although an advantage, shop-floor experience of advanced automation/batch systems is not a necessity. In terms of formal qualifications, however, you will need a degree or HNC/HND in Computer Sciences or a related subject.

A distinct advantage would be some experience of hardware and computer logic.

Salary is very attractive, and a good range of company benefits includes a staff restaurant and a progressive sick pay scheme.

There are all the advantages too of our location, with the benefit of both sea and country. And naturally, where appropriate, we'll help you out with relocation expenses.

Please write or phone for an application form to: John Head, ITC Credit Limited, Hollingbury, Brighton BN1 5AL. Tel: Brighton 507111 ext. 3623.

ITC Credit Limited

SYSTEMS ANALYST
GREENFORD
£28,000

A graduate with two years' experience in a commercial environment as a programmer or analyst is required for this position. A mature personality with a practical analytical approach to work on accounting and planning systems development, assisting users and implementing new systems.

PROGRAMMER/ANALYST
NORTH GATWICK
£28,000

This is an ideal opportunity for a programmer wishing to get involved in systems development work. International Company, requiring a good programming background with RPG II experience.

PROGRAMMERS
NEAR GATWICK
£28,000

To work on commercial/business systems using mini-computers. At least one year of high-level or low-level programming language experience will be considered, not necessarily on minis.

SOFTWARE PROGRAMMER
NEAR GATWICK
£28,000

If you have less than one year's recent experience of writing in ASSEMBLER, preferably on mini-computers this position will suit you. Experience of working on system software for a multi-processor system, memory management and database is an added advantage, which will be well rewarded.

Please phone or call in for more details and an application form.

AMES PERSONNEL
TELEPHONE: 01-767 0611

London Borough of Enfield



Systems Analysts (2)

£4630 - £4900

(Phase III Award Pending)

We wish to fill two posts that have been created to assist with the Borough's development into "on-line" systems. Applicants should have a sound background in programming and systems analysis with some years' experience of either public or private sector data processing.

These posts offer a varied and demanding job in a modern office with attractive surroundings bordering rural Hertfordshire.

If you would like further information ring Ian Gray, 01-898 6262, ext. 2620.

An application form is available upon receipt of a s.a.e. from the Borough Treasurer, PO Box 54, Civic Centre, Silver Street, Enfield EN1 3XP. Closing date 20th June, 1978. Please quote reference ORA/1/82.

ITC Credit Limited

Malmesbury, Wiltshire
Career Opportunities
with Pye TMC Limited
Microprocessors Software
Computer Aided Design
(Up to £7000)

The Company's Advanced Development Division is a forward looking design group, exploiting LSI technology in the application of stored programmed control to telephone switching and also the development of other advanced products for the telecommunications industry in both the Switching and Subs-Apparatus areas. The Division is situated at the Company's modern new headquarters in Malmesbury, Wiltshire

SENIOR SOFTWARE ENGINEERS
Required to work in close collaboration with LSI circuit design engineers to produce new micro-processor based products. Applications are invited from Analysts. Programmers preferably with Intel 8080/85 and mini-computer experience gained in the electronics industry. A degree in relevant discipline is preferred but evidence of the completion of relevant training courses in assembly language together with at least 5 years' experience in this field is more important (Ref ADD/W).

These positions are open to suitably qualified men and women. The Company which is part of the multi-national Philips Group, offers the full range of benefits including subsidised canteen facilities, and discounts on group consumer products, etc. Generous relocation expenses will be paid where appropriate.

For further information phone the Personnel Department on Malmesbury 2121 or write with full details of education and career to date (quoting the appropriate reference) to the Recruitment Officer, Pye TMC Limited, Swindon Road, Malmesbury, Wiltshire, SN16 8NA.

SCIENTIFIC PROGRAMMERS
Required to work on the development of software tools for CAD, design automation, automatic testing and advanced graphics systems as applicable to the realisation of LSI circuit design. Successful applicants will be working on computer, types SEL 82.



Data Processing Manager

INTERNATIONAL BANK BASED IN KARACHI, PAKISTAN

Excellent Income Package

We want to meet a Pakistani National to take responsibility for the installation, development and Redvelopment of a number of very important accounting systems being installed by our client, a major International Bank. These systems will be installed initially in Karachi although responsibility for data processing will cover the whole of Pakistan.

We want to meet someone who has spent some time either here or in another Western country, learning the "tricks of the trade" of data processing. Probably now, you will be working as a Senior Systems Analyst or Project Manager with about six or seven years' data processing experience. The ideal specification will be someone who has come from programming them into systems and before that, will have achieved a professional qualification, ideally in the U.K.

Within the Bank's data processing unit — this is "number one in Pakistan", we are looking for someone who doesn't sit in his office all day hoping things will get done, because they don't do them? You will ensure that they do! Certainly, initially, you will have to lead from the front from the technical point of view and you will be very much dependent upon your own resources. However, as you progress successfully, your own responsibility will become much wider and eventually, encompass a wide range of locations.

The position offered is a rare opportunity, we do not remember seeing a comparable position, therefore, we are looking for someone who is prepared to relocate back to Pakistan, later if necessary, to travel elsewhere in the Middle East for our client, but first and foremost, get the new operation off the ground in an impressive way.

Please apply to John Goldsmith, Ref. 1683/CW.

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd., 15, Buckingham Palace Road, London, S.W.1.
Tel: 01-828 5356 - 24 hour answerphone service.

JOHN GOLDSMITH (Computer Recruitment) Ltd.

CONSULTANCY

West London/City
Mainframe and Minis
To £8,000 + Profit Share
+ Expenses

A successful medium-sized DP consultancy has career opportunities for consultants in its mainframe and mini divisions.

For the mainframe division, we expect programmers to have at least two years' experience of COBOL, PL/I or MARK IV. IBM experience would be preferable, but full re-training will be given. Analysts should have two to three years' experience in systems analysis and design with a programming background — any additional skills such as teleprocessing or data base would be useful.

Candidates for the mini division should be experienced in programming commercial minis such as DG, HP or DEC, using COBOL, FORTRAN or ASSEMBLER.

The company offers high earnings, a friendly working environment and the opportunity to work on a wide variety of systems.

FOR FURTHER INFORMATION, PLEASE CONTACT MARK IRENS, QUOTING REFERENCE NUMBER CW 36/3.

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HR.
TELEPHONE: 01-583 7141 (24 HOURS)

Hutton Executive Selection Consultants

MANCHESTER/LEEDS

SALES MANAGER
BASIC TO £8,000 + 12 MONTH GUARANTEE
GENEROUS CAR ALLOWANCE AND EXPENSES
DISTRIBUTED INTELLIGENCE/MINI COMPUTERS

Applications are invited from either established managers or senior sales executives ready to move into management, to join one of the foremost manufacturers of distributed processing systems in Europe. An excellent salary and expenses package will be paid for the person who can fill this key vacancy.

Reference CW 36/3

SALES EXECUTIVES

BASIC £5,500 TO £6,500

12 MONTH GUARANTEE OF £1,500 TO £2,000

CAR OR ALLOWANCE

N. MANCHESTER + LANCS/LEEDS + YORKSHIRE/EDINBURGH

DISTRIBUTED INTELLIGENCE/MINI COMPUTERS

Applications are invited from established executives with proven records of selling successfully against quota. Sound commercial experience in the mini/mainframe industry and good application's experience in teleprocessing environments are particularly useful.

Reference CW 36/3

APPLICATIONS WILL BE TREATED IN THE STRICTEST CONFIDENCE AND SHOULD BE MADE TO NOB POWER ADVISING DIRECTOR. PLEASE TELEPHONE WHERE POSSIBLE.

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE
HUTTON STREET, LONDON EC4Y 8HR.

TELEPHONE: 01-583 7141 (24 HOURS)

Hutton
SPECIALIST RECRUITMENT CONSULTANTS

COMPUTER WEEKLY, June 15, 1978

Portsmouth Polytechnic
SCHOOL OF ARCHITECTURE
**Computer
Programmer**

Post 464 (A)

A specialist is sought to create and develop computer aided architectural design programs within the School. The department has just acquired a Tandon 4014-1 interactive graphical terminal linking to the Polytechnic's ICL 2900. The successful candidate will implement existing programs and, in collaboration with staff, develop new programs in areas of architectural education and design including computer aided learning, building utilisation, decision aiding, and acoustic, lighting and thermal design science.

Salary Scale: T3/4. Up to a maximum of £3,702 + £602 supplement per annum.

DEPARTMENT OF GEOGRAPHY
**Technician
for Computation
Laboratories**

Post 583

Duties include computer operating, digitising and data preparation in the department's computation laboratories. The successful applicant will provide technical services for a variety of computer applications in Geographical Science courses. Applicants should have experience of operating a mini computer and have oversight suitable for digitising work from graphic and stereoscopic images. A particular interest in computer graphics/computer mapping applications and/or familiarity with BASIC or FORTRAN languages would be an advantage.

Salary Scale: T1 or T2 up to a maximum of £2,853 + £470.25 supplement per annum.

COMPUTING CENTRE
**Applications
Programmer**

Post 561 (B)

A new ICL 2900 has been installed running under the VME/B operating system providing a computing service to the whole Polytechnic. Applications programming projects cover all aspects of the Polytechnic's work, including not only scientific and technical work but also the design and implementation of computer systems for the administration and library.

The Computing Centre seeks to recruit a programmer of graduates or equivalent qualifications, and some previous experience, who wishes to increase his/her experience by working on a large modern computer. There is a wide range of projects now being started, including graphics software, implementation of the IDMS database, and software to support minicomputers linked to the 2900.

Salary scale: AP2/4. Up to a maximum of £3,702 + £502 supplement per annum.

Application forms are available from the Staff Office, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth, or by telephoning Portsmouth 27881, extension 317.

SOFTWARE ENGINEERS
**COMPUTER AIDED
DESIGN AND
DRAUGHTING £6-9K**

Computervision a world leader in the manufacture and marketing of CAD systems, requires additional software engineers to join its expanding European development and support teams.

These posts will be based in Computervision's European Software Centre near Amersham and will involve occasional travel to other European Countries.

Applicants should have several years' experience of Fortran programming and preferably some knowledge of mini-computer operating systems and assembler languages. Experience in one or more of the following fields would be an advantage:

1. PC/ES design and production
2. Numerical control applications
3. Cartography
4. Communications

For application form, write or phone to:

COMPUTERVISION LIMITED

Computervision House,
Penn Street Village,
Nr Amersham
BUCKS.
Holtier Green (04947) 4771

DUSSELDORF

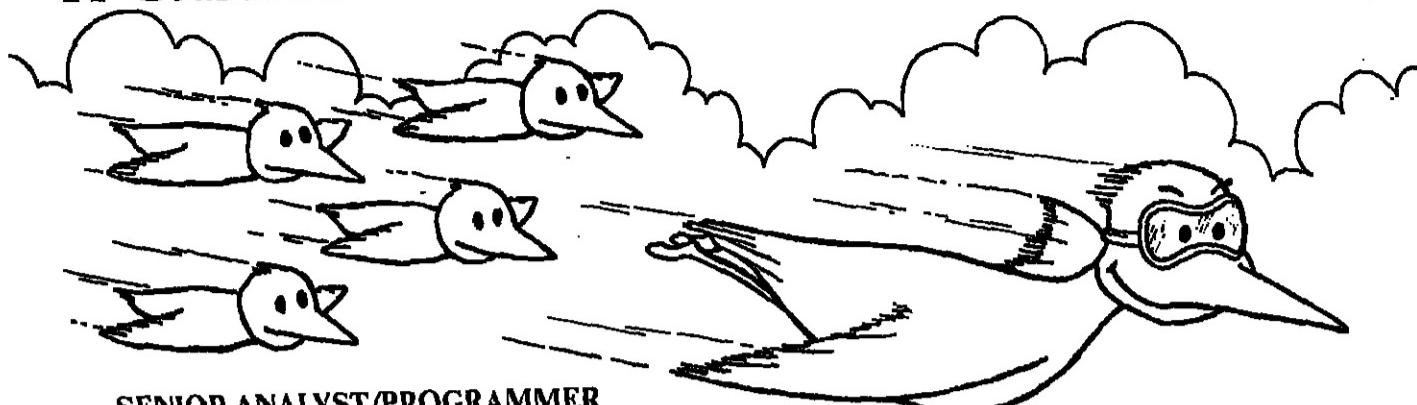
GERMANY

IBM/OS: test master programmer for 6 months contract in Dusseldorf, excellent negotiable salary.

Focus Computer Consultants
01-487 5781

MYRIAD

A CHANCE FOR YOU TO LEAD THE WAY!



SENIOR ANALYST/PROGRAMMER

(TEAM LEADER)

BERKS/BUCKS BORDER

We are seeking a SENIOR PROGRAMMER or ANALYST/PROGRAMMER keen to enhance their career by becoming further involved in Systems Analysis and Design.

The position offers:-

- * Team Leading responsibility
- * Systems Design and Development Involvement

Please telephone for a confidential discussion or write to: 30 Fleet Street, London EC4Y 1AA 01-353 0981



Technical Support

We are looking for the following experienced technical support people

HARDWARE preferably with big disc knowledge.
SOFTWARE with assembler and operating systems experience.

Why change to Data General

You'll receive a competitive salary that really matches your experience. Naturally, you'll receive standard benefits including a company car/car allowance and be eligible for an excellent pension scheme.

You'll be based in West London, but have the opportunity to travel to Europe on special assignments.

Don't miss this opportunity

Opportunities as good as this don't happen every day of the week. So don't miss out. Write or phone Janet Field at the address below — reversing the charges if you wish.

Data General

Data General Limited, Weetwood House, 320 Ruislip Road East, Greenford, Middlesex UB6 9RF. Tel: 01-578 9231.



Technical Author

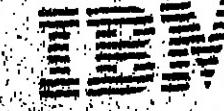
IBM United Kingdom Laboratories Limited are looking for a Technical Author, male or female, to join its Technical Documentation department. The work involves the preparation of user and maintenance manuals for the range of program products under development in our Laboratories at Hursley Park, near Winchester, Hants.

You will probably be either: an experienced technical author who has worked on complex programming systems or a data processing professional with an aptitude for communicating in writing.

You must have the ability to negotiate with people at all levels and preferably have a degree in Information Science or a similar qualification.

An attractive salary will be negotiated in line with experience and potential. As well as a substantial employee benefits package which includes a non-contributory pension scheme and free life assurance, we offer generous assistance with relocation expenses where appropriate, and variable working hours.

If you are interested, please write giving details of education and previous experience to Mike Shute, Personnel Officer, IBM United Kingdom Laboratories, Hursley Park, Winchester, Hants, quoting ref.



Shift Leader

LONDON N.14

ICL 1903T 9K 6MT 4EDS60

Johnson, Matthey & Co. Limited, leading refiners and fabricators of precious metals, are seeking experienced Shift Leaders for their modern Data Processing Department.

Knowledge of George 2+ and RJE is essential and candidates would be expected to organise and lead a two-shift system (7am-3pm, 3pm-11pm), Monday to Friday.

Commuting costs would be negotiable from £4,000 per annum inclusive and our excellent fringe benefits include free lunches, four weeks holiday and a contributory pension scheme.

Applicants are invited to attend for interview on Monday evening, 19th June between 7pm and 8pm or apply direct to Miss B. M. G. Gray, Staff Officer.

JOHNSON MATTHEY
100 HIGH STREET, SOUTHWICH
LONDON N.14 BET 01-882 8111

JOHN GOLDSMITH (Computer Recruitment) Ltd.

consultants and programmers - Manchester

consultants to £9,000
project consultants to £7,000

senior programmers to £6,000
programmers to £5,000

Hoskyns Northern Division has been in operation now for three years. In that time we have trebled in size and can point to an outstanding record of success in a wide range of projects on a wide range of hardware. In the coming year we plan to implement a further expansion programme to build on this success. To support our expansion we need further professional staff with practical experience of designing, writing and implementing commercial on-line systems, both on mainframe and mini-computers.

Opportunities exist at all levels for:

Consultants: to evaluate requirements and advise clients on computer strategy; to manage projects from design to implementation. Specific experience of manufacturing industry would be useful.

Project Consultants: to be responsible for the design of advanced systems and to manage programming teams writing those systems. Specific DBMS and TP Monitor experience is required.

Senior Programmers: with some supervisory experience and in-depth programming experience of on-line systems.
Programmers: with at least one year's experience of a commercial programming language.

As one of the largest computer services companies in the country Hoskyns offers a wide choice of career opportunities and locations – we have offices in most parts of the UK and our International Division has worked in most of the European, Middle Eastern, and Commonwealth countries.

Conditions of service are commensurate with what you would expect from a major company in this field – relocation expenses would be paid where appropriate. Although our current offices are in the centre of Manchester we expect to move to Sale in the near future as part of our expansion plan.

If you would be interested in discussing the opportunities with us we would like to hear from you. Write with full career and salary details to:

J. M. Burns
John Hoskyns and Company Limited, Byrom House, Quay Street, Manchester M3 3JD
or telephone: 061-834 4235.

hoskyns

A systems company with over 500 professional staff,
13 computer centres and 14 years of continuous growth

An unusually interesting position for a person with an analytical background

INTERNATIONAL OPERATIONS PLANNING

Salary: Circa £5,600 plus mortgage subsidy

Home base: Very attractive part of Southern England

Our client is establishing a number of international computer sites. They now want to meet someone who can help plan the local computer environment for these sites. By this we mean the physical environment of the computer room, the staffing requirements and also the implication of future business expansion on these two aspects.

The selected applicant must be capable of assisting local staff at the international sites and advising them on management. Therefore, a preparedness to get on with people of diverse nationalities is very important. We are looking for someone who will have the ability to "think in the right way", by this we mean analytically, and who will have probably worked in a problem solving environment for at least two years.

The position will require some overseas travel, occasionally at short notice, and when away from the home base, the applicant will be expected to make decisions without reference to a superior. Therefore, you must have the confidence to be able to do this.

The equipment being installed is in the Burroughes B1700/1800 range, and some knowledge of this equipment would be advantageous. However, this is not the most important aspect; more important is a genuine enthusiasm, flexibility and an ability to persuade people to do things quickly and accurately.

If the position interests you then we would like to meet you as soon as possible.

Please apply to John Goldsmith, Ref. 1648/CW.

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER
John Goldsmith (Computer Recruitment) Ltd, 16, Buckingham Palace Road, London, S.W.1
Tel: 01-828 5566 - 24 hour answeringphone service.

JOHN GOLDSMITH (Computer Recruitment) Ltd.

John is 1st

University of Birmingham

COMPUTER CENTRE Adviser for Interactive Computing

The Centre's provision of a wide range of local and remote computing facilities is now being extended by the installation of a large, dedicated interactive system for both teaching and research.

A new post of Computer Officer, tenable for two years from 1st October, 1978, has been created in the User Services Group to develop the use within the University of:

Computer Aided Instruction and Computer Aided Learning techniques.

Applications are invited from graduates with computing experience, especially in the areas of simulation and modelling techniques. A higher degree is desirable, but clear evidence of previous work successfully completed is equally important.

Starting salary, according to age, qualifications and experience, will be on the scale:

£3,189-£5,282-£8,178 (under review).

Further information from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom applications (three copies) including full curriculum vitae and naming three referees, should be sent by 3rd July, 1978.

Please quote ref. CW24.

datascene

CONTRACTS

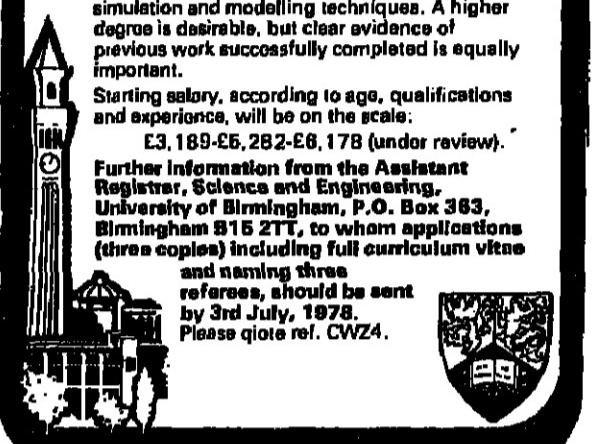
BARBADOS BAHAMAS BERMUDA

SORRY NOT THIS WEEK
BUT
PROGRAMMERS & ANALYSTS
WILL FIND A WIDE CHOICE OF
ASSIGNMENTS IN THE U.K. &
EUROPE
AT DATASCENE
ALL PAYING TOP RATES
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Sceptre House
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24 hour answer phone



THE OPEN UNIVERSITY Student Computing Service

ASSISTANT AREA COMPUTING SERVICE MANAGER

Applications are invited for the above post at the university headquarters at Walton Hall, Milton Keynes. The Student Computing Service maintains a large national time-sharing network using DEC-20 and Hewlett Packard 2000 computer systems which provide a practical computing service to 30,000 students via remote terminals. Most of the system and programming development work associated with student material is carried out at Walton.

The successful applicant will have a good background in computing, probably with experience in Operations and Programming, and preferably include some contact with time-sharing communications equipment, staff management, development of procedures and liaison with users and engineers.

He/she will be responsible for the day to day operation of the installation and will assist the Area Manager in the provision and maintenance of a network of remote student terminals.

Salary, according to experience, will be within the range £3189-£8178 p.a. The University offers a holiday allowance of 30 days plus 8 public holidays at Christmas and Easter. Excellent Superannuation benefits are available and a relocation grant may be made towards the cost of removal due to take up the appointment.

Application forms and further particulars are available by postcard request, please, from The Employment Officer, Area Computing Service, University, P.O. Box 75, Walton Hall, Milton Keynes, MK7 6AL, or by telephone from Milton Keynes 524044, or Milton Keynes 638885 (24 hour answering service).

Closing date for applications 30th June, 1978.

Distributed Processing and Scientific Systems Junior Systems Analysts

Programmers (Ref. F128)

£2800-£414 p.w. or £2800-£6072 p.a. (Salaries to be reviewed July 1st)

The Authority operates an ICL 2900 series computer and a network of 2800s in divisional centres. It is now proposed to extend the network by installing mini-computers in 20 or more laboratories to capture and process scientific data. The laboratories will be linked to the divisional centres which in turn will be linked to the central mainframe based in Birmingham. The data captured in these laboratories will be progressively refined as it proceeds to the centre of the network.

The present requirement is for energetic and intelligent persons (male or female) to join the development team engaged on this project, and preference is likely to be given to those with a scientific and/or mini-computer background.

In addition to this major project there are also vacancies in the existing engineering computing support team and applicants willing will also be considered for placement in that area.

Further details and application forms are obtainable from the Regional Personnel Manager, Severn Trent Water Authority, Abberley House, 287 Coventry Road, Sheldon, Birmingham B26 2PU. Tel: 021-749 2224. Ext. 202. Fax: 021-749 2224. Ext. 2027.

Product Management in Control Dataset Ltd.

Dataset is a joint venture between Control Data Limited and International Computers Limited. It is the United Kingdom's largest computer supplier company, manufacturing and marketing paper products, ribbons, furniture and magnetic media to a wide variety of computer users. Annual turnover is in eight figures.

In order to support its position as market leader the Company is currently seeking men or women to fill two recent positions in its Product Management Team.

**PRODUCT
MANAGER**
An experienced Product Manager is required for this position which carries responsibility for the Company's major product lines (magnetic tape and disk). Excellent background must include at least four years in marketing consumer goods, education to degree level and preferably an understanding of the computer industry. Starting salary will be attractive and there is a bonus payable against defined objectives. A company car will be provided.

**ASSISTANT
PRODUCT MANAGER**
For this position we are seeking a candidate who has substantial theoretical training (perhaps through studies for an MBA or degree in Business Studies) with a marketing emphasis allied to practical experience in systems analysis or computer support activities. The successful candidate will be responsible for a defined sector of our product range, initially under close supervision, but will receive necessary additional training. There is a clear opportunity for career advancement within the marketing-oriented organisation. Starting salary for the position will be according to qualifications and experience.

Both these posts are based in Latchworth (relocation to Stevenage early in 1979). And relocation assistance will be provided where appropriate. Other benefits are those you would expect of a major employer in the computer industry. Please write, giving brief personal career details, to:

Mr. D. Finch-Clegg,
Personal Manager,
Control Dataset Limited,
Arena House, Broadway,
Latchworth, Herts SG6 5BX

**CD
CONTROL
DATA**

QUEEN ELIZABETH MEDICAL CENTRE BIRMINGHAM

SOFTWARE PROGRAMMERS

FOR REAL-TIME PROJECT

Salary £2,440

We are looking for programmers with more than 1 year's software experience to join our Software development team. We use Univac hardware with in-house transaction and database software for our Real-time Patient Care System.

Please send your application form to:

Mr. D. Windley, Programming Manager, or
Mrs. J. Horrocks, Administrator, Computer Services
Unit, Queen Elizabeth Hospital, Sefton Street,
Birmingham B15 2TH. Tel: 021-472 3777 ext. 250.

APPLICON UNITED KINGDOM

PLAN YOUR CAREER WITH APPLICON

MANCHESTER BASED (HEADQUARTERS IN BOSTON USA)

TWO OUTSTANDING OPPORTUNITIES FOR SYSTEMS ENGINEERS IN THE COMPUTER GRAPHICS INDUSTRY

SALARY CIRCA £7,000 PLUS COMPANY CAR

Applikon is a world leader in Computer Graphics, one of the most exciting and fastest growing areas in today's electronics industry. They supply the most advanced and cost effective graphic systems available and users include many of the world's leading companies.

In the UK Applikon's potential is impressive and this has led to the recruitment for 2 Systems Engineers of the highest quality. One with STRONG ELECTRONICS EXPERIENCE IN PCB DESIGN and the second with a CAD/CAM/3D ORIENTATION.

QUALIFICATIONS:
1. Strong personal motivation and enthusiasm, and communication skills.
2. PCB candidates will have quality experience in this field and a high standard of academic attainment.
3. Candidates for the CAD/CAM/3D position will be experienced in this field, may well be PhDs and have a background including NC and FINITE ELEMENT ANALYSIS.
4. For both positions mini computer and Fortran experience is important.

Please ring or write for details:
David Harris, PER, Lambert House East, Clarendon Street, Nottingham. Tel: (0602) 49781.

Ref. CW 929

DPSC GROUP LIMITED, CROWN HOUSE, MORDEN, SURREY SM4 5EU. Tel: No: 01-540 8311.

Ref. CW 929

**DP
SC**

PROGRAMMER/ANALYSTS

ARE YOU INTERESTED IN FUTURE CAREER DEVELOPMENT?

IF YOU ARE CAPABLE OF EARNING
£5,000 to £6,000 PER YEAR AND HAVE

**RPG2 EXPERIENCE AND
ICL 2903 SOFTWARE BACKGROUND**

COULD YOU WORK IN A SMALL ESTABLISHED TEAM? WITH
THE

**A
ABILITY TO WORK ON YOUR OWN INITIATIVE?**

LOOK, IF THE ANSWERS TO THESE QUESTIONS IS YES
THEN

LET US KNOW, GIVE US A RING

We are a major international company providing Car Phone, Pocket Beeper and Medical Diagnostic services throughout the UK and overseas.

Our present 2903 with ED530s will shortly be enhanced to 40K 2804 with 800 lpm printer and VDU's. Future plans include an independent computer division.

This is an ideal opportunity for career development and to make a positive contribution to the ambitious plans of this go-ahead company. Benefits include bonus scheme, 4 weeks' holiday, pension scheme and further training into online databases and new languages.

Please phone:
Ten Cards
Systems & Programming Manager
Air Call Unit
Phone 01-384 8204 ext. 1000
0100-44118
0133-22745 ext. 240

**AIR CALL
communications services**

Real Time Systems & Software Designers



to meet the needs of
the 1980's
in computer-controlled
communications

At Boston, Nottingham, Plessey is building a team to design a new range of processor controlled switching and office automation systems offering a wide range of fascinating applications. The Company has a notable export record and aims to increase its influence in world telecommunications markets.

Real Time Systems and Software Designers are needed to come into this growth activity and to enjoy

PER
Professional & Executive Recruitment

PLESSEY

Please ring or write for details:
David Harris, PER, Lambert House East, Clarendon Street, Nottingham. Tel: (0602) 49781.

Ref. CW 929

DPSC GROUP LIMITED, CROWN HOUSE, MORDEN, SURREY SM4 5EU. Tel: No: 01-540 8311.

Ref. CW 929

**DP
SC**

**COMPUTER
MAINTENANCE
ENGINEER**

The Central Electricity Generating Board is looking for a suitable person to join the staff at HEYSHAM POWER STATION which is under construction to the south of Morecambe Bay, Lancashire.

A computer maintenance engineer is required for the power station control equipment. This equipment comprises 3 Ferranti Argus 500 computers on process control, data, alarm analysis and recording, and 2 off-line PDP IIIs based data processors.

This post is for a day work engineer to provide back-up service to a team of shift engineers on this equipment.

Applicants should possess suitable qualifications and must have sound experience of digital computer based control systems. The ability to read simple diagnostic maintenance programmes will be necessary although training can be provided.

Salary will be within one of the following ranges depending on qualifications and experience: £6485-£7221 p.a. or £4181-£48175 p.a.

Applications in writing, from either sex, giving details of age, experience, qualifications, etc. to the Personnel Manager, C.E.G.B., Europa House, Bird Hill Lane, Chaddes Heath, Stockport, Cheshire SK8 0XA to arrive no later than 3 July, 1978. Please quote vacancy number 514/78/CW.

Please write in confidence to:

Steve Markham
Floating Point Systems S.A. Ltd.,
42 Queens Road, Reading, Berks.
(0734) 50181

E

**SUPPORT
ANALYSTS**

— are needed to complement our highly professional team. This will involve both pre and post sales effort and will require understanding of problems within all our application areas. Experience of matrix computing methods and signal processing will be an advantage.

Please write in confidence to:

Steve Markham
Floating Point Systems S.A. Ltd.,
42 Queens Road, Reading, Berks.
(0734) 50181

E

**SENIOR
PROGRAMMER**

(Ref. M. 16) Salary up to £6,500

If you are an experienced programmer ready to take responsibility for others, why not come and join us at Lambeth?

In addition to managing a team of programmers you will also assist in the design of systems and the preparation of program specifications. Computing at Lambeth is currently based on twin ICL 1900's supporting a variety of batch and on-line systems.

The computer centre is located close to tube and main-line stations as well as major bus routes. Other benefits include flexible, subsidised canteen, generous holidays and assistance with relocation expenses in some cases.

Further information or application form obtainable from the Personnel Officer, Directorate of Management Services, London Borough of Lambeth, Hambrick House, Brixton, S.W.2. or Telephone 01-274 7722, Ext. 696.

Please apply in writing with full Curriculum Vitae.

LAMBETH

Ludbrook RECRUITMENT- COMPUTER PERSONNEL

This position will be of particular interest to a dynamic young man or woman with a flair for Sales and Administration in a very fast moving environment.

The person appointed will work directly with our clients and co-ordinate all advertising and recruitment drives.

Salary and conditions will be commensurate with the importance we attach to this position.

Please apply in writing with full Curriculum Vitae.

Ludbrook

Ludbrook Management Services,
1 Gallowtree Gate,
Leicester.

Telephone Leicester (0533) 52314

LAMBETH

OPERATORS (2 SHIFT) A NEW ENVIRONMENT

NORTH LONDON

to £3900

A leading manufacturer of equipment for the Print industry winning several Queen's Awards for the Industry (in the export market), now requires OPERATORS to join their friendly team running a Century 75. There will be a complete CHANGE OF MAINFRAME to a SYS 3 MOD. 15D in the Summer, coupled with a move to a NEW COMPUTER SUITE and the introduction of a TP NETWORK.

It is envisaged that the successful applicants will have 6-18 months' experience on NCR equipment and can show the initiative and responsibility to become an integral part of the organisation.

The installation is easily accessible by public transport and a holiday bonus is paid.

Ref. RJ. 237.

**LEEDS****PROJECT LEADERS****£4,500-£6,000 + Profit Share**

Three years' commercial experience with a sound background of ASSEMBLER and high level languages. To be involved in full development from Systems Analysis through programming to implementation.

PROGRAMMERS**£3,500-£5,000 + Profit Share**

COBOL experience and ASSEMBLER an advantage. Software house environment. Rapid progression to Project Leader level expected.

SYSTEMS ANALYST**£5,500**

Level 6/8/20. Batch/On-line. Must have 3/4 years' experience. Excellent prospects in fast moving bureau environment. Bureau experience desirable but not essential.

PROGRAMMERS**£5,000**

ASSEMBLER preferably on mini but IBM considered. Excellent opportunities to expand with a fast growing software house. Must have 3 commercial applications background.

73/75 ALBION STREET
0532-36622

**IF THE JOB YOU REQUIRE IS NOT HERE — PLEASE RING OR CALL IN AT ANY OF THE ABOVE BRANCHES —
WE ARE HERE TO HELP YOU IN 1978.**

MANCHESTER**SYSTEMS CONSULTANT****£7,500 + car**

To assist in the implementation of all manufacturing systems for a number of medium sized engineering companies. Must have good production control experience.

COBOL LECTURER**£4,000-£6,000**

Major training Company requires well experienced COBOL programmer. Preferably on IBM and/or ICL kit. Must be able to communicate effectively. Good prospects.

PROGRAMMER**£3,500-£6,000**

Experienced IBM COBOL programmer for work on a variety of installations in the North West. General commercial experience required. Must be mobile.

SYSTEMS PROGRAMMER**£4,900**

Working on ICL 1900, but shortly introducing ICL 2800. Must have COBOL experience. Knowledge of stock and production control an advantage.

65 PRINCESS STREET
061-236 4593**SHEFFIELD****ANALYST / PROGRAMMER****£5,300**

With two years' scientific applications on minis. ASSEMBLER, FORTRAN, CORAL, RTL 2, for manufacturing environment. Small departments. Excellent promotion prospects. Relocation.

PROGRAMMER**£4,200**

COBOL programmer. 1½ years' experience commercial applications on 1900 series being updated Bureau environment. On-line. Excellent prospects.

ANALYST / PROGRAMMER**£5,400**

COBOL ICL series. Database environment. Two years' commercial experience. User liaison. On-line/batch installation. Excellent prospects in forward looking company.

PROJECT LEADER**£6,500 + Review July**

With at least five years' experience in D.P. coming through programming and Systems Analyst rank. Self-motivation and staff control a must. Able to converse at all levels. A demanding position in a forward looking Bureau environment.

54/56 FARGATE
0742 738783**Traffic Control****Traffic Engineer / Technician — P&TOII****£4326-£5739**

Applications are invited for the responsible post of Systems Engineer (Hardware) P&TOII in the Department of the Environment (NI) Urban Traffic Control Team which is presently being planned for Belfast.

Applicants should have held a position of responsibility involved in the production, installation or maintenance of equipment in the field of Data Transmission, Line Communication, Electronics or Computer Hardware. They must also have obtained one of the following qualifications —

(a) a Degree in Civil, Mechanical or Electrical Engineering, plus 2 years' post qualification experience.

OR

(b) an HNC/HND in Civil, Mechanical or Electrical Engineering or equivalent, plus 7 years' post qualification experience. Exceptionally candidates with an appropriate ONC/OND and at least 10 years' post qualification experience may be considered.

The successful applicant will be required to advise on all technical matters associated with the system's hardware and liaise with staff responsible for the Software and Traffic Engineering.

Starting salary which is on the scale £4326-£5739 will be related to qualifications and experience.

Please write or telephone for an application form, quoting job reference SB 172/78/CW, to the Civil Service Commission, Rosospark House, Upper Newington Road, Belfast BT4 3NR (telephone Dundonald 4685 ext. 306). Completed forms must be returned to arrive not later than 29th June, 1978.

 **NORTHERN IRELAND CIVIL SERVICE**
SENIOR ANALYST / PROGRAMMER

The Company is a leading manufacturer of electrical equipment with 1200 employees and two factory locations. Due to the variation in requirements and wide range of manufacturing processes, control of materials and stocks involves computer systems, which are likely to be further extended to improve production efficiency.

The person appointed will play a key role in monitoring and extending computer systems. He or she will be in charge of an IBM Systems 3 Model 8 computer installation, and will be involved in various commercial applications and in preparing a new order entry/service system and a much more informative payroll. Assisted by two trainees and the punch room staff, the Senior Analyst will be responsible for RPG programming and IPICS for the two factories.

Where necessary, training will supplement experience, and prospects of promotion are good. The salary will be in the range £4000-£5000, according to age and experience.

Benefits of working for the Company include, subsidised restaurant, 4 weeks holidays, pension scheme, woodland location with on-site sports and social facilities and GUPA membership.

Write with full details of experience and salary required, or write/phone for an application form to:

Personnel Manager
GOBLIN (BVC) Limited
Leatherhead, Surrey
KT22 7EJ

GOBLIN BVC

A member of the BSR Group

IBM 370 APPLICATIONS PROGRAMMERS

We are a leading independent brewery company situated in North Cambridge, operating batch processing work on an IBM 370/115 miniframe, converting and supporting three IBM 3780 direct order entry systems, for the Great Western Group.

We require two applications programmers with at least two to three years' programming experience, preferably in PL/I, to be concerned in developing new systems under the guidance of a senior programmer.

They will also be required to train as support programmers for the new 3780 system and any knowledge of this programming language would be an advantage.

Salary is negotiable and company benefits include a non-contributory pension scheme, a staff bonus scheme, 4 weeks annual holiday and a good working environment in a new computer block.

Application forms may be obtained from:

The Company Secretary
GILBERT & JOHN GREENALL LTD.
P.O. Box 2, Colne Valley Distillery
Warrington, Cheshire
WA2 7RR, England

OCC computer personnel limited

*The door
to
opportunity...*



We at OCC have been recruitment consultants to the computer industry at home and abroad for over seven years, and continued growth means we need to recruit two additional consultants. You need self-motivation, the ability to deal convincingly with candidates and clients at all levels, and the ability to express yourself well in speech and writing. Your past experience is less important and could have been in systems support, consultancy or personnel.

Senior Personnel Consultant to £7,000**Personnel Consultant to £5,000**

- ★ Variety of work
- ★ Personal development

- ★ Professional environment
- ★ Excellent conditions

Working as a consultant for OCC offers you a variety of work and exposure to a wide variety of hardware, software and applications. You will meet a lot of people, both as clients and candidates, and you will visit client sites to discuss current requirements. The work provides considerable scope for personal development.

OCC have been at the forefront of developing a set of standards for the recruitment companies through the Computing Services Association. You will therefore join a highly professional team. You will work in a relaxed and friendly environment, although high standards of work are expected. A training programme tailored to your particular needs, will be drawn up when you join. Conditions of employment include pension and sick schemes, regular appraisals and salary reviews, etc.

If you are interested in the opportunities we offer, please contact me, Neville John, to discuss matters further. Day telephone: 01-242 9356. Evenings or weekends Farnborough (Kent) 52017. Alternatively, to find out more about us and meet some of our consultants, informally, come to our offices at the times shown opposite.

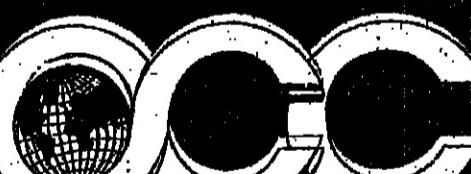
INFORMAL DISCUSSIONS:

Monday, 17th July
Tuesday, 18th July
Wednesday, 19th July
up to 7 p.m.



Members of
Computing
Services
Association

16 Bedford Row
London WC1R 4EB
01-242 9356
Telex 21120



Specialists since 1971
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DOUGLAS SYSTEMS ANALYSTS PROGRAMMERS

The Douglas Group comprises of a number of Companies within the Construction Industry, both at home and abroad. A powerful replacement computer will be installed in 1978 to handle several new terminal systems for which untrained Systems Analysts are now sought.

PROGRAMMERS with at least three years' experience may move into Systems Analysts after a short qualifying period. There are some vacancies to suit applicants who may wish to make this transition.

Both positions will appeal to applicants who wish to develop their careers using the latest techniques.

Send details of career to: Mr. J. S. Aldred, Data Processing Manager, R. M. Douglas Contractors Ltd., 336 George Road, Erdington, Birmingham B24 2RZ. Telephone 021-4648844 ext. 211.

Completed forms to be returned not later than Friday, July 7, 1978.

ILEA Schools and College Computer Service Supervisor

Salary range: £4,442-£6,000 inclusive of £800.80 of London Weighting and Phase I and II supplements)

This post is occupied by the ILEA in the City of London Polytechnic Computer Centre. The person appointed will work to the computer manager and will be responsible for the day-to-day supervision of a computer service to 150 secondary schools and some 30 colleges of further education. Interactive facilities are provided on a P2000 and a System 6000 which will shortly be enhanced to support fully up to 80 simultaneous users. There is also a main computer service for batch processing. There is a team of support staff working to the supervisor.

The Authority is committed to developing computer education in schools and colleges and the person appointed will have an interest in all aspects of this development.

Application forms and further details from: The Education Officer, EO/Estab. 2A/1, Ilford, IG7 7PR, The County Hall, London, SE1 7PB.

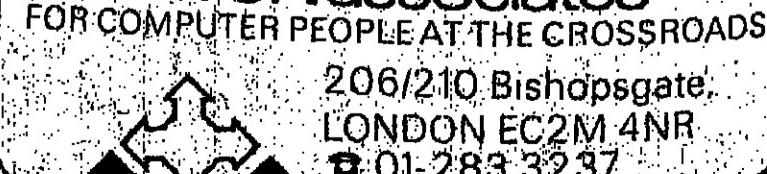
Please enclose a large stamped addressed envelope for reply.

Completed forms to be returned not later than Friday, July 7, 1978.

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MARTONASSOCIATES FOR COMPUTER PEOPLE AT THE CROSSROADS

206/210 BISHOPSGATE,
LONDON EC2M 4NR
01-283 3237

**SCANDINAVIAN BANK**

requires

EXPERIENCED ANALYSTS AND PROGRAMMERS

Due to the continued expansion of the Bank and its DP activities the following additional staff are required:

SYSTEMS ANALYSTS
With at least two years' experience in a banking environment. Experience of on-line systems an added advantage.

COBOL PROGRAMMERS
With two years' programming experience on an IBM 370 under DOS/VSE and POWER/VSE. Knowledge of Assembler and/or CICS/VSE an added advantage.

The Bank is currently developing a sophisticated on-line/real time system and the new entrants will form part of the development team.

Attractive salaries commensurate with experience. fringe benefits include low interest mortgage schemes, non-contributory pension scheme, luncheon vouchers and season ticket loans.

Apply in writing quoting experience to:

DATA PROCESSING MANAGER, SCANDINAVIAN BANK LIMITED
16 LEADENHALL STREET, LONDON EC3A 1BB
TELEPHONE 01-480 6165

Computer Programmers

Lucas World Services require programmers, with at least two years' COBOL or ASSEMBLER experience. To work in the centre of Birmingham.

The successful applicants will be required to work on Order Processing and ancillary systems currently running in real-time on two UNIVAC 418/111 but to be replaced by a large distributed network in two years. Experience with mini computers would be an advantage but not essential.

Full details of qualifications and experience should be forwarded to:

Personnel Manager
Lucas Service UK Limited
Plum Street,
Aston,
Birmingham B8 7RS.

Lucas Service

occ computer personnel limited

Systems

**Banking
Insurance
Money Market**

International consultancy — Opportunity for overseas travel — Turnkey Mini and Mainframe systems.

Systems Consultants
£6,000 - £8,500

Systems Consultants should have at least 4 years' Systems experience, and a knowledge of programming. Specific experience should include some involvement in one of the areas listed above. Candidates should have either Project Leader experience or potential to develop into this role in due course.

Software Consultants
£6,000 - £8,500

Software Consultants should have experience of Real Time mini computer software in any application area. The essential requirement is the ability to design/enhance and implement complex systems software.

Programming Consultants
£4,500 - £7,000

Programming Consultants should have a minimum of 2 years' programming experience. Mini experience is of particular interest as is experience of Financial or Accounting systems. For some projects, IBM PL/I/CICS would also be useful.

To apply for these positions, or for further information, please contact Roger Allington on 01-242 9356 (day) or Berkhamsted (04427) 2299 (evenings/weekends). Ref: 310F/CW/RA.

16 Bedford Row
London WC1R 4EB
01-242 9356
Telex 21120



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**SCIENCE RESEARCH COUNCIL
APPLETON LABORATORY REQUIRES A
SCIENTIFIC OFFICER**

To work at the Astrophysics Research Division at Culham on a project to study the X-ray Spectra from Solar Flares. The successful candidate will develop software to run on a PDP 11 Computer System for the analysis of data from a satellite that will be launched in October 1979 and should be prepared to spend periods abroad at the Satellite Operations Centre near Washington, D.C., U.S.A.

Applicants for this post should have a degree or equivalent qualification in Physics, Mathematics or Computer Science and some experience of FORTRAN Programming. A knowledge of Mini-Computers would be an additional advantage.

Salary: on the scale £2,929 p.a. to £4,415 p.a. the exact step depending on qualifications and experience.

Non-contributory pension scheme.
Please write for an application form to: The Secretary, Science Research Council, Appleton Laboratory, Oxford Park, Slough, SL3 9JX, or Telephone 01-707 1111 ext. 2222, or 01-707 1111 ext. 2223, or 01-707 1111 ext. 2224, or 01-707 1111 ext. 2225.

**LIVERPOOL POLYTECHNIC
DEPARTMENT OF
MATHEMATICS**

**PRINCIPLE LECTURER
COMPUTER SERVICES**

Applicants should have a sound knowledge and relevant experience of computer services development and management in the educational context. It is anticipated that this post will eventually involve responsibility for the operation of Computer Services Unit, i.e. under initial task, being to examine needs and make recommendations regarding future provision.

Salary scale: £7047-£8844 p.a.

Application forms and further particulars are available from the Personnel Office, Liverpool Polytechnic, Richmond House, 1 Richmond, Liverpool L1 4JL, Tel: 01-527 1111 ext. 43.

**UNIVERSITY OF SURREY
COMPUTING UNIT**

**SYSTEMS
PROGRAMMER/
ANALYST**

Very experienced programmers/analysts needed to assist in the initial development of systems using mainframes, minis and microcomputers. Posts may include project manager, system designer, system developer, compiler processor configuration. We currently operate two ICL 1800 computers; development of the 1800 computer system is in progress.

The salary scale will be up to £21,729 p.a. according to general experience.

**WALES GAS
NWY CYMRU**

oxford polytechnic

Computer Centre

Chief Programmer

(Salary on P01 scale up to £14,000)

An experienced programmer is required to take charge of the development of a new system for the control of gas distribution. Applicants should hold a degree or equivalent and have good experience of GEORGE II and MAXIMOP. The Polytechnic has an MSc. (Elec.) which is currently being enhanced.

**PROGRAMMERS WITH
COBOL EXPERIENCE**

For further details write to Mrs. V. A. Atkin, Central Services Personnel Department, The Polytechnic, 14-16 Goldstone Road, Hatfield, Herts, SG1 2UE, or telephone 01-763 3000, or 01-763 3001, or 01-763 3002.

Further particulars and application forms may be obtained from the Personnel Officer, Oxford Polytechnic, Oxford, OX1 3EF, to whom they should be returned as soon as possible.

**PROGRAMMERS &
ANALYST,
PROGRAMMERS
who want to move to
SYSTEMS /
ANALYSIS**

Starting salary up to £6,000, around three years mainframe programming experience required. Computer Science graduates would be considered at an appropriate lower salary. (Ref: 880W)

**COBOL
PROGRAMMERS
who want to learn
DATABASE &
TP TECHNIQUES**

Starting salary up to £6,000, at least two years programming experience required, including COBOL. (Ref: 886W)

**PROGRAMMERS
who want to move to
COBOL**

Starting salary up to £6,000, at least two years' mainframe experience required (no scientific), any language, any hardware. (Ref: 886WT)

We are recruiting for clients who have a large installation in the West End of London, with plenty of development work, using database and TP techniques. Good training and career prospects, excellent working conditions (new offices).

Please ring us in confidence, quoting the appropriate reference, or leave a message on our answering machine after hours.

Tel: 01-637 5796

EDP Systems
52-53 Margaret Street
London W1N 7FF

**COMPUTER
OPERATORS &
TRAINEES**

Cardiff up to £4000

In readiness for our move to 24-hour, 3-shift operating, we need to recruit a number of experienced and trainee operators for our computer centre. The system comprises dual B3501 and B3771 processors with a combined memory of 590 KB and sharing a total disk capacity of 800MB. There will be involvement in a wide range of both routine and special applications including a Real Time Stores System.

Applicants for the posts of operator should ideally have a minimum of 18 months' relevant operating experience on a large commercial installation.

We also have vacancies for Trainee Operators who are at least 18 years of age and will have either limited experience or are interested in starting a career within computing. Salary for this position will be from £2550 depending on previous experience.

Career progression, depending on the individual's ability, is available through Operations Development, Programming and Management.

For further information and an application form, please write to: Dave Prestwich, Computer Operations Officer, Wales Gas, Snelling House, Bute Terrace, Cardiff, or ring Cardiff 32131, extension 3270.

**WALES GAS
NWY CYMRU**

oxford polytechnic

Computer Centre

Chief Programmer

(Salary on P01 scale up to £14,000)

An experienced programmer is required to take charge of the development of a new system for the control of gas distribution. Applicants should hold a degree or equivalent and have good experience of GEORGE II and MAXIMOP. The Polytechnic has an MSc. (Elec.) which is currently being enhanced.

Computer Scientist for Petro-Chemical Research

Due to the increasing number and complexity of projects both in hand and imminent, our Research Centre at Abingdon — which specialises in fuels, lubricants, and additives — needs a technically-minded and creative man or woman to join a small team providing an efficient, and flexible computing service for our scientists and technicians.

Using the Centre's multi-terminal interactive PDP II System linked to the worldwide Exxon IBM 370 network, this team is responsible for all aspects of computer application and development arising from projects under investigation, including the use of mini computers in data logging and real-time applications.

With a degree in Maths, Statistics, Chemistry, Electronics, Chemical Engineering, or an associated discipline, you must be able to appreciate the scientific problems encountered in our research — logically thinking them through to provide cost-effective computer solutions.

At least one or two years' practical experience with systems or software is essential — preferably in a scientific environment. A statistical background would also be an advantage.

A competitive salary will be supplemented by a full range of benefits, and generous relocation assistance to this attractive rural area — just an hour away from London and only 20 minutes from Oxford — will be provided where appropriate.

Please write with full details, to: D.P. Sweeney, Employee Relations Service, Esso Research Centre, Abingdon, Oxon OX13 6AE. Or phone him on: 0235 21600.

ESSO RESEARCH

Our Client's leading position in the European Time Sharing Market is based upon its success in offering a powerful, highly-reliable Communications Service.

Following increased sales they now wish to augment their Network Trouble-shooting team.

The successful candidate will have:

- * Experience of network-control techniques, probably having gained this in a senior position in Operations.
- * An appreciation of telecommunications hardware and software.

The challenge will be to act as a technical trouble-shooter/consultant in pre- and post-sales situations, as well as assisting in the development of new network facilities.

Career prospects and continuous training, in an environment of keen professionalism, are impressive, and reflect the vast technical resources and attitude of this International Corporation.

Ref: CW/6/2

CONTACT: Dave Scarlett ON: 01-935 0671

SPECIALIST COMPUTER RECRUITMENT LIMITED

BIRMINGHAM 021-236 3781

35-37 Great Charles Street Queenway, Birmingham B3 2BR

MANCHESTER 061-833 0427

Freepost, Blackfriars House, The Parcage, Manchester M3 8BB

LONDON 01-935 0671

Freepost, 6, 1/2, Blandford Street, London W1E 1JZ



Programmers

Opportunities to move into
ADVANCED SOFTWARE DEVELOPMENT

A number of opportunities exist to join the young, enthusiastic and professional software development team of Membrain, using advanced structural development techniques to design and implement software which will be the most advanced ATE software in Europe.

We offer excellent starting salaries depending on experience, and our other benefits include a profit-sharing bonus scheme.

We are located in a convenient part of Dorset, close to Bournemouth and the coast, and where appropriate, we provide generous assistance to enable you to relocate to this area.

For immediate consideration send details of your qualifications, experience and salary expectations to

Donald Crawford
Membrain Limited
Fendown Industrial Estate
Wimborne, Dorset
Tel. Fendown (0202) 893853

MEMBRAIN
European leaders in
Automatic testing

Salary scale: £3304-£4880 p.a.
(including Inner London Weighting and Pay Supplement). Salary may be above the minimum depending on class of degree and experience.

Application forms and further details may be obtained from: Mrs. Veni Wilson, Social Services, Research Council, 4 Temple Avenue, London EC4Y 0BD. Tel: 01-363 5282 ext. 110. Ref: T80/CW.

Closing date for applications: 30th June, 1978.

Computastars —

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We're the winners of the Western Regional final but it isn't only track events that our teamwork excels.

In our working environment we are also geared up for any event with some of the most sophisticated techniques and software available.

Not only that, but our entire computing function is about 10 up-grade of Sigma 8 hardware.

To add to our winning team of professionals we need experienced people to be immediately involved in the development of several wide range of projects. These include Data Base and Real-Time Line facilities via VDU's using COBOL as the primary language.

So, if your experience in programming would fit into our team we will be more than delighted to put back some money into your computing career.

Please telephone for an application form between Q830 and Q800 or write to:

Colin Smith

CMG (City of London) Limited

Eastgate, 73 Leaden Street, London E1 8EE

Telex 021-50222

SOCIAL SCIENCE GRADUATES

TEMPORARY APPOINTMENTS

Applications are invited from social science graduates for a temporary Scientific Assistant post with the Royal Society of Arts. Initially the appointment will be for up to 6 months with the possibility of renewal for a further six months and the successful candidate will work as part of a team providing the Secretariat of the Committee of the Royal Society of Arts.

Salary scale: £3304-£4880 p.a.
(including Inner London Weighting and Pay Supplement). Salary may be above the minimum depending on class of degree and experience.

Application forms and further details may be obtained from: Mrs. Veni Wilson, Social Services, Research Council, 4 Temple Avenue, London EC4Y 0BD. Tel: 01-363 5282 ext. 110. Ref: T80/CW.

Closing date for applications: 30th June, 1978.

KILBURN POLYTECHNIC

PART-TIME LECTURERS

EITHER DAY
OR EVENING

for Certified Accountants
Courses in the following subjects:

FINANCIAL MANAGEMENT

AUDITING & INVESTIGATION

MANAGEMENT MATHEMATICS

ACCOUNTING 3

AUDITING

STATISTICS

DATA PROCESSING

ECONOMICS

Application forms may be obtained from the Secretary of the Department, Mrs. Veni Wilson, Social Services, Research Council, 4 Temple Avenue, London EC4Y 0BD. Tel: 01-363 5282 ext. 110. Ref: T80/CW.

Systems and Programming Staff

Opportunities in Computer Programming

A far-reaching programme of work and computer enhancement has created opportunities at our head office in Surrey for people looking for career progression and job satisfaction, tackling the challenging problems arising from our development plans. The present installation consists of a large ICL 1904A configuration which will be replaced by dual ICL 2960's in January 1978, with future emphasis being placed especially on database and communications potential.

The people we need should have a capacity for original and logical thought and the initiative to work with minimal supervision. We give comprehensive training and recognise individual potential for development on to systems analysis work. Programmers are encouraged to use their ability and experience to contribute as much as they can to the design and planning stages. Promotion is based entirely on merit and the senior positions in the department are almost invariably filled from within.

Candidates should either have relevant programming experience or be suitable for a post as trainee programmers, i.e., of degree standard or with a successful career background.

An attractive starting salary is offered which is dependent upon age, qualifications and experience.

Excellent conditions of employment include contributory pension fund, free life assurance and all the benefits of working for a large organisation. We operate a Flexitime system and have an excellent sports and social club.

Please write or telephone for an application form from

MMB The Personnel Officer
Milk Marketing Board
Thame Ditton
Surrey KT7 0EL
Tel 01-398 4101.

At its London headquarters, the Authority operates two IBM 370/148 Computers connected to a large (150 terminal) teleprocessing network covering the principal centres of population in the Region.

Interesting developments in this network are in hand involving the evaluation of IBM Series 1 and similar equipment.

The software environment is VM with DOS/VS, OS/VS1 and CMS. The teleprocessing monitor is SHADOW with TP programs written in IBM Assembler. Batch work is handled almost entirely by Informatics' MARK IV file management system. Applications are invited from suitably qualified persons for the position of:

Project Leader Program Development £6,834 - £7,302 PER ANNUM (Currently under review)

The successful candidate will manage a team of system analysts and programmers in the day-to-day maintenance and production of new suites of programs to installation standards. Four years' experience of programming and system analysis, two in a senior role, are a minimum requirement. Knowledge of Informatics' MARK IV and IBM's Basic Assembler Language would be an advantage, although more weight will be given to evidence of leadership and organising ability.

35 hour week.
Generous holidays.

Pension Scheme — Interchange arrangements.

Staff restaurant.

Applications, quoting reference CW and giving full particulars of age, educational qualifications and previous experience should be sent not later than 10 days from publication to Laurence D. Widd, C.Eng., F.I.C.E., F.I.Mech.E., F.I.W.E.S., Division Manager, Room 650, Thames Water Authority, Metropolitan Water Division, 173 Rosebery Avenue, London, E.C.1.

THE POST IS OPEN TO MALE AND FEMALE APPLICANTS.

Thames Water

CITY OF MANCHESTER TELLER'S DEPARTMENT: COBOL PROGRAMMERS ANALYST/PROGRAMMERS £3,395-£4,214 p.a. (Inclusive of allowances) (Phase III increase expected from 1.7.1978)

Based in the City Treasurer's Computer Service which operates a large ICL System 47/72.

Applicants should have experience in systems analysis or programming using COBOL or another high level programming language.

The successful applicant will be responsible for detailed systems work, system design, project documentation, program specification and programming. The work is varied and interesting. There are several advanced on-line systems, with more to be developed in the future.

Conditions of Employment are: Standard 40-hour week, below normal local authority overtime. A 35-hour week with flexible working pattern. The salary is in accordance with a salary scale Grade A/2, £3,395-£4,214 plus £3.25 annual supplement, plus a further supplement of £50 when it will be according to age, experience and qualifications.

Applications giving details of age, education and experience should be returned to the City Treasurer's Department, P.O. Box 314, 7th Floor, Corporation House, Manchester M2 5BB.

**Corporation of London
Guildhall, E.C.2**

PROGRAMMER £4183-£5954 (Salary review July 1978)

The Corporation of London is seeking a Programmer to join a team of five other programmers in its installation which is responsible for a wide range of financial and non-financial systems. For example, Integrated Accounting System, Rate and Rent Collecting System, Stores, School Fees, Payrolls, etc., together with Traffic Tickets, Register of Electors and Examination System, etc.

The successful candidate should have 18 months of COBOL or PL/I programming experience and will be given in-house training and further external training as necessary. The general environment is such that a broad base of experience can be obtained from the installation. Both COBOL and PL/I languages are used.

The salaries are inclusive of a salary supplement of £312, special supplement £477 and the 5% Phase II salary adjustment, and will be commensurate with experience. Annual increments are then granted up to the scale limits. Other benefits include generous holidays, superannuation scheme, season ticket advances, subsidised staff restaurant and resettlement advances in approved cases.

The installation comprises an ICL 1902 48K store processor, 3EDS, 4 tape decks, etc. and GEORGE 2 operating system.

Applications with details of working experience and Academic passes, or enquiries, are invited and should be addressed to:

Computer Services Manager
Guildhall, London, EC2P 2EJ

WMB The Personnel Officer
Milk Marketing Board
Thame Ditton
Surrey KT7 0EL
Tel 01-398 4101.

Line Controller

c24500
+ Preferential Mortgage Facilities
Bexleyheath N.W. Kent

The Woolwich, which is one of the country's largest building societies is enhancing its teleprocessing system to support its branches throughout the U.K.

The Society wishes to recruit a Line Controller who will assist in the operational running of what will ultimately be a large IBM based data communications network.

Candidates should preferably be educated to 'A' level, although good 'O' or CSE levels will be acceptable. Previous experience of controlling a data communications network is essential.

A comprehensive remuneration package accompanies this position including a preferential mortgage facility and excellent pension scheme. Relocation expenses may be paid where necessary.

Please ring Mr A. Hughes — Network Controller, on Crayford 526232 Ext 503 (day) or 01-663 6181 evenings/weekends. Alternatively please write to the above for further details or application form at Woolwich Equitable Building Society, 30 Ethel Road, Bexleyheath, Kent, DA7 6BP.

W
WOOLWICH
EQUITABLE BUILDING
SOCIETY

Computer Programmer Research

This appointment offers the chance to join a new pharmaceutical research organisation which is part of one of the world's largest chemical companies. We are seeking to appoint an Analyst Programmer within the Computing Services Group to develop and maintain a variety of software to meet all the data processing and statistical needs for a multidisciplinary group of life-scientists.

The central hardware consists of a Hewlett Packard 21 MX/E computer with the 50 MB HP 7920 disc linked to a HP 2100 computer and HP 7900 disc. Appropriate peripherals are mostly distributed through the laboratories in accord with our policy of on-line capture and central processing of all data. The scientific disciplines to be serviced include synthetic chemistry, drug analysis, pharmacokinetics, drug metabolism, pharmacy, immunology and information services. A fully equipped electronics laboratory supports this function by the provision of micro-processor based interfaces and other devices as required.

The successful candidate, male or female, will therefore have a minimum of five years experience in a scientific and/or statistical environment and be fully conversant with Fortran and Basic languages. A formal knowledge of statistics would be an added advantage.

A first class salary will be paid, conditions of employment are excellent and our benefits package is of the standard expected from a major international company.

Please write or telephone for an application form to:

Mrs. M. C. Hannay, Personnel Services Manager, Hoechst UK Limited, Walton Manor, Walton, Milton Keynes, Bucks.
(Telephone Pineham 5068)

Hoechst



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Three great places to work, and plenty of work to get your teeth into. At Westinghouse we are at the forefront of innovative technology in the use of computers for railway systems, mining and process controls. Our order books are growing and we need ambitious (and we mean ambitious) software staff to work on a variety of projects involving mini and micro computers, real time process control and monitoring, CAD linked support systems etc. We've got a wide range of machines: HP, NOVA, DEC, and languages: CORAL 66, RTL2, ASSEMBLER, FORTRAN etc.

Please write today to: P.A. Murley, Company Personnel Officer, Westinghouse Brake and Signal Co. Ltd., FREEPOST, Chippenham, Wilts, Telephone Chippenham (0249) 4141

We're currently looking for:
Project Leaders
Analyst/Programmers
Programmers
Senior Systems Analysis
Systems Analysis

WESTINGHOUSE
Brake and Signal Co Ltd Chippenham Wilts
Advanced Technology in
Chippenham, Wokingham &
Bracknell.

NORTHERN ENGLAND CONTRACT PROGRAMMERS

Applications are invited for the post of Computer Operator from persons with at least five GCE 'O' level passes, or equivalent, and knowledge of computer operation. Salary would be an advantageous basis for negotiation. An ideal candidate would be a person with a good academic record and a desire to learn. The post involves working in a team environment, and requires the ability to work under pressure. The salary is £3,720 per annum, inclusive of (Salary Award under review). Details and application form (to be returned by 15th June), the Stafford 3141, E12, 2-39 Wokingham, Tel: 0344 2351, Contracting Office, to the Staffing Office, Northern Polytechnic, Wellington Street, London NW1 4AJ. Closing date — 20th June, 1978.

Application form and further particulars may be obtained from the Staffing Office, Northern Polytechnic, Wellington Street, London NW1 4AJ. Closing date — 20th June, 1978.

Senior Analyst Manufacturing Systems West of Scotland

for an important engineering group of US parentage employing over 300 people in the manufacture of process plant for UK and European markets.

An ambitious programme of new and extended computer applications is under way; current projects include production and materials planning, inventory control, productivity improvement, cost reduction and output statistics for management information.

Candidates, aged 30 to 45, must have at least five years' manufacturing systems design experience. Initial salary negotiable with attractive benefits including relocation, if appropriate.

Please write with brief details — in confidence — to W. J. O. Michie ref. FY32543.

This appointment is open to men and women.

MSL Management Consultants

Management Selection Limited
14 St. Vincent Place Glasgow G1 2EU

Portsmouth Polytechnic
Computing Centre

Lecturer II/ Senior Lecturer in Computer Science

Applications are invited from graduates specialising in systems programming and program language theory. The successful candidate will be required to lecture, principally at degree level, and will have the opportunity to participate in the research and development activities of the Computing Centre.

Salary scale £4101 to £6501 (efficiency bar) to £7572 per annum.

Research Fellow in Systems Programming

The Computing Centre is engaged in collaborative work with International Computers Limited in the systems programming field.

The work is based on an ICL 2904 educational computer which is to be linked to the ICL 2960 which is the main service computer of the Polytechnic.

In connection with this activity, applications are invited from men and women for the position of Research Fellow from graduates with experience in systems programming. The post is of two-year duration, with possible renewal.

Salary scale £4218 to £4232 per annum.

Application forms and further particulars may be obtained from the Staff Officer, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth, PO1 2QZ, to whom completed applications should be returned by June 30, 1978, quoting ref. F21.

ADS

Recruitment Consultants
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CHARING CROSS COMPUTER PROJECT

HOSPITAL COMPUTER PROJECT MANAGER

(Male or Female)
SALARY SCALE £2076-£2647 PER ANNUM
(Scale 23)

(INCLUDING LONDON WEIGHTING AND SUPPLEMENTS)
ON INCREASE PENDING

A prominent Indian manufacturing company has recently formed a new division to build and distribute on a worldwide basis an advanced commercial microcomputer.

Interviews for the above positions will be held in the London area on June 23, 1978 with the Indian Principal present.

These opportunities offering excellent salaries and fringe benefits are open only to Indian nationals.

Applicants should contact Mrs. D. Stanley at Chalfont 810746 to arrange an interview.

INDIA

MARKETING MANAGER

SENIOR SYSTEMS ENGINEER

SENIOR HARDWARE ENGINEER

A vacancy exists in the Department of Medical Computing Services, Charing Cross Hospital (a teaching hospital) for a Hospital Computer Project Manager to take control of the development and introduction of computer systems at the Charing Cross Hospital and later at other hospitals in the Ealing, Hammersmith and Chelsea Health Area.

The successful applicant will be responsible to the Regional Computer Officer, but will be responsible for the day-to-day running of the computer system.

Initial salary will be £2,076 per annum.

270 COBOL PROGRAMMERS

160 TDS or IDS COBOL PROGRAMMERS

15000/16000 COBOL PROGRAMMERS

100 PL/I PROGRAMMERS

100 ASSEMBLER PROGRAMMERS

100 DATA PROCESSING SPECIALISTS

100 SYSTEMS ANALYSTS

100 COMPUTER OPERATORS

100 COMPUTER PROGRAMMERS

100 COMPUTER SYSTEMS ENGINEERS

100 COMPUTER SYSTEMS ANALYSTS

100 COMPUTER SYSTEMS PROGRAMMERS

100 COMPUTER SYSTEMS SPECIALISTS

100 COMPUTER SYSTEMS TRAINERS

100 COMPUTER SYSTEMS USERS

100 COMPUTER SYSTEMS WORKERS

100 COMPUTER SYSTEMS ENGINEERS

100 COMPUTER SYSTEMS ANALYSTS

100 COMPUTER SYSTEMS PROGRAMMERS

100 COMPUTER SYSTEMS SPECIALISTS

100 COMPUTER SYSTEMS TRAINERS

100 COMPUTER SYSTEMS WORKERS

100 COMPUTER SYSTEMS ENGINEERS

100 COMPUTER SYSTEMS ANALYSTS

100 COMPUTER SYSTEMS PROGRAMMERS

TEHRAN

DON'T BE SHORT-CHANGED
CHECK YOUR PACKAGE
AND YOUR CAREER

HIGH TAX FREE SALARIES PLUS FAMILY ACCOMMODATION AND OTHER SUBSTANTIAL BENEFITS

If you have Honeywell 6000 or Level 66 experience and are considering a term in Iran, then here are the best opportunities available. My client is one of the USA's top packages for Tehran.

Consider the following:

TAX FREE SALARY

A generous tax free cash income of between £27,920 p.a. and £33,680 p.a. for personnel with 4-8 years' applications experience. Higher salaries are available for more senior and specialised positions.

ACCOMMODATION

The company provides a separate apartment for EACH employee, the size of which varies according to the family.

The company pays for all utilities, e.g. gas, electricity, etc. with the exception of the telephone.

The company provides a good standard of furnishings for the apartment including television, washing machine, fridge/freezer, etc.

N.B. The company budgets for an average of \$17,000 to cover first year rental and furnishings for EACH apartment.

ADDITIONAL BENEFITS

The company provides home to office transportation.

The company pays local school fees for children over 5.

The company pays Medical Insurance.

The company pays emergency home leave where necessary.

HOME LEAVE

The contract is for 18 months' duration and a family trip home is paid for after 12 months.

JOB CONTENT

The company has been awarded a substantial contract due to its reputation for systems and software development based on Honeywell computers. The scope of this project ensures a high level of job satisfaction.

FUTURE CAREER PROSPECTS

The company is a well established systems software house and NOT just a bodyshop. Consequently, they view each new appointment as the start of a long term career through an initial assignment in Tehran. In addition to IRAN, future opportunities exist in the USA, UK and EUROPE.

REQUIREMENTS

PROGRAMMER/ANALYSTS

Minimum of 4 years' good experience in COBOL with applications knowledge of GCOS and JCL.

SYSTEMS PROGRAMMERS

Around 8 years' experience in DP with extensive knowledge of GCOS, GMAP, TDS and/or NPS.

DATABASE SPECIALIST

Around 8 years' experience in DP with extensive knowledge of GCOS, IDS, TDS and database design.

CALL DAVID J. HUTCHINSON ON 01-499 4501 TO DISCUSS

REF RW 24/1

THE BEST OFFER AVAILABLE

hutchinson-scoggins recruitment

10 Dover Street, London W1X 3PH

CREATIVE PEOPLE for a CREATIVE COMPANY

LONDON

My client currently operates a large twin IBM based bureau, specialising in systems for the advertising industry. They are soon to take delivery of an additional machine, a PDP 11/70 to cater for their expansion programme (future plans include ordering 2 more PDP 11/70s during the next 18 months). Enjoying the financial support of their parent public company, this thriving young subsidiary employs approximately 60 DP staff. It has good internal communications, with highly visible senior management, and practices a "promotion totally on merit" policy. All the current systems are to be completely re-designed and rewritten to operate in an on-line environment.

PROGRAMMER/ANALYSTS IBM DOS COBOL Up to £6000

Currently over 40 advertising agencies are serviced by these administrative and accounting systems. These systems are undergoing significant enhancements and development of new facilities towards a totally integrated package to cope with the needs of the advertising industry.

This interesting project requires self-reliant, young professionals who can enjoy a company atmosphere which encourages them to use their initiative and imagination to the full. The steady pressure of an assured workload will enable you to develop your skills at your own pace. Planned growth will allow the company to accommodate fast developers.

REF RW 24/2

DEC PROGRAMMERS

£4000-£6000
BASIC +

Junior & Senior

The installation of a large disc based PDP 11/70 and the probability of 2 additional 11/70s in the next 18 months give rise to a heavy development schedule. Very interesting projects are to be undertaken including sophisticated on-line systems for the booking of TV time. The machine will operate under RSTS and use RMS 11/K file management system.

REF RW 24/3

RSTS SPECIALIST MANAGER

£ NEG

This person will be responsible for the generation and maintenance of machine software and the development of PDP applications programs by his team. He will be highly experienced in DEC systems and possess a thorough detail level knowledge of RSTS. This is a superb opportunity for a strong technician to develop his career into management through an interesting and challenging role.

REF RW 24/4

CALL DAVID J. HUTCHINSON ON 01-499 4501

Philips Telecommunications Computer Controlled Telephone Exchanges

The recent large order from Saudi Arabia has confirmed the position of Philips as one of the world leaders in the supply and manufacture of computer controlled telephone exchanges. This, plus enhancements and additions to the range of switching systems, coupled with the current rapid expansion of the department, has created vacancies within the U.K. part of the international development team working on these systems. The U.K. base for this effort is Malmesbury, Wiltshire where the laboratories of Philips Telecommunications and Pye TMC are located. The development effort extends into the fields of space and time division switching systems, local and trunk applications, integration of microprocessors, and network management centres.

Software Systems Designers Systems Programmers

£4,000—£7,000

Are required to work in real time telephony applications, basic operating system design and general support areas. At least two years programming experience, preferably in assembler and control systems programming, is required for the systems programming vacancies. Four or more years experience in real time of control systems software design is required for the senior positions. Experience of telecommunications would be advantageous. Some positions may entail occasional short visits to our other laboratories in Holland and Belgium.

Malmesbury is in the north west corner of Wiltshire between the Marlborough Downs and the Cotswolds and combines a town of historic interest with all the amenities of a modern community. Motorway systems and good class roads bring it within easy reach of most major towns and cities.

These are exceptional opportunities providing scope to develop your expertise.

First class salaries and conditions of service are offered and assistance with relocation will be given where necessary.

STOP PRESS

Job Opportunities also exist in Holland.

Please write giving full details of career to date quoting Reference HC. to Jane Thomas, Personnel Manager, Pye TMC Limited, Swindon Road, Malmesbury, Wiltshire SN16 9NA.

PHILIPS

HERTS/MIDDLESEX NOTICE TO SYSTEMS ANALYSTS

Haymarket Computing are D.P. recruitment specialists to 35 companies in the Herts/Middlesex area. Such is the current computer employment market that at any one time almost all of these companies have vacancies for Analysts and/or Programmers. At the present moment, however, our most urgent need is for Analysts on behalf of 12 clients in the following areas:

Cockfosters
Borehamwood
Potters Bar
Waltham Cross
Hemel Hempstead
Hayes

Stanmore
Harrow
Wembley
Southgate
Tottenham
Luton

Salaries range from £4,800 to £7,300 covering all levels of experience from Juniors to Project Leaders.

For more information ring:
HAYMARKET COMPUTING LTD.
Tel: Cuffley (Herts.) 4130
up to 6.30 p.m.



MIDLAND RECRUITMENT FEATURE

Advertisers are reminded that on June 22 Computer Weekly is highlighting career opportunities in the Midlands with a recruitment feature.

To secure space in this important feature:

Contact Alan Scott 021-388 4838 or John Farrar 01-261 8088

Copy deadline: 4 p.m., Friday, June 16

LOGISTIX

Data Processing Recruitment Consultants

PL/1 Programmers City of London

Salary: not less than 6K & up to 9K Plus Mortgage

An important International financial institution based in the city is expanding its team members and is seeking PL/1 programmers at all levels up to and beyond team leader level. Ideally, you will have around 3 years of solid PL/1 experience under O.S. and will either have on-line expertise or a desire to move into this area or Data base design through participation in our Client's training programmes.

Of particular importance is the ability to work as a member of a specialist project team under strict documentation and programming standards. A second language (COBOL or Assembler) would in addition be considered advantageous. Our client offers a 2½% subsidised mortgage, personal loan scheme, private health and a non-contributory pension plan. Interviews will be held in London during June.

Mini Communications E.E.C.

Salaries: £9.5-15K + exceptional benefits

(Computer Science or Maths) or extensive relevant experience in lieu.

You are certain to contribute valuable expertise to this prestigious group whilst expanding your own threshold of experience through working closely with other professionals at your own level. Our Client will pay full re-location expenses for you and your family and provide a generous resettlement advance in addition to meeting the costs of temporary accommodation pending the location of permanent housing. Numerous other first-class benefits go to making this a very attractive opportunity.

IMS Data - Base London+E.E.C.

Salary: U.K. to 9K E.E.C. to 16K

Our client one of the 'Seven Sisters' Oil Companies has asked Logistix to assist in recruiting a number of IMS Data base specialists up to project leader level and beyond. The only pre-requisite incorporated in our brief is that candidates are able to demonstrate solid IMS Data base skills.

DL/I is of course essential and if linked with PL/1, COBOL or Assembler will be of considerable interest to our Client.

Banking or Financial Applications Switzerland

Salaries: £1,500 per month

This company is amongst the most advanced and sophisticated users of D.P. and should be regarded for its long-term career potential rather than as a stepping stone to greener pastures. Fringe benefits normally associated with a Major Oil Company are offered together with other rewards of a more unusual nature. These are of course in addition to well above average salaries. Interest in our Client.

Copenhagen Communications

Salaries to £15K

We have several outstanding permanent career vacancies for Scandinavia's foremost hardware and software systems supplier. Particular machine experience is not essential but those who have a solid background in message and telco switching, data communications and procedures will prove invaluable to the growth pattern this Company has set for itself. However of especial interest are:

a) Mini-Computers
(i) DEC POP 11
(ii) DG Nova/Eclipse
(iii) Prime 300/400/500 and ICL New Range

Interviews will be held in our offices on Monday to Saturday, 9.00-21.00 hours basis throughout the remainder of this month.

Logistix, Freepost 32, London W1E 3YZ
01 491 4636 Telex 28800

(Reverse charges)

LOGISTIX

Avon House, 366 Oxford Street, London W1N 9HA

Senior Systems Analyst

LONDON c. £8,000

Our Client, a leading international engineering Company has a requirement for a Senior Systems Analyst to be responsible for the implementation of their Accounting and other commercial systems. It is envisaged that this will be achieved by a combination of software in-house and in-house effort. The successful candidate will be responsible for both a small team of in-house programmers and for co-ordinating and monitoring the work of the software house selected.

Candidates must have a proven record of major systems development using data base and transaction processing techniques.

The in-house computer system is a newly acquired large mini installation to be used both for technical and commercial applications. The operating system supports Fortan, Cobol, RPG and Basic Language Compilers and Total Data Base Management. It provides time sharing, transaction processing, batch and remote batch processing and communication capability.

Please write, in complete confidence to

Shapcrest Ltd.

Recruitment Consultants
33 Queen Anne Street, London W1M 0AL

SHIFT LEADER

CRAWLEY, SUSSEX

c.£4,000
(inc. Shift premium)

We are an expanding international company, manufacturing high performance cells and batteries for a broad range of applications.

Evidence of our growth is significant in the D.P. area, where we will shortly be installing an IBM 370/138 to replace our existing 3715 and require someone to take charge of one of our two shifts. The Crawley Computer Centre will control a network involving four other Computers throughout Europe and this rapid expansion offers a challenging environment in which to work.

If you have OS/DOS experience and require an interesting job, with prospects, find out more by contacting:

John Pelham, Computer Operations Manager or
Kevin Elvidge, Personnel Officer on
Crawley 26041.

Mallory Batteries Ltd.,
Gatwick Road
Crawley,
West Sussex

Your chance for Management

ANALYST/PROGRAMMER

BRENTWOOD, ESSEX
£6,000

Now is the time to start thinking seriously about your future. This year is half gone and isn't it time to move along doing the same old job. Well here's your chance to change that. Our client is a large insurance company. They have recently installed a new IBM System 32 at their main office. They are looking for an Analyst/Programmer with good RPG II to head the department. You will be responsible for the design and implementation of systems planned for this year. If you have at least 3 years' D.P. experience and feel that you can meet the challenge of this demanding position - call now for an immediate interview.

SYSTEMS ANALYSTS

HARPSFORD, KENT
£4500-£6000

Why not take a look at offering similar salaries, fringe benefits and certainly offering a better quality of life. Our clients are a well established and growing business from virtual nothing to those who have already made a major career. Prospects are good, fringe benefits are attractive, and relocation assistance will be given. We certainly recommend further discussion.

SENIOR ANALYSTS

£7000

Our client is a major U.K. shipping and container transport business. The substantial investment in Data Processing is based on IBM 370 hardware processing and communications to their needs. Business expansion and hardware growth are the contributing factors to their need for additional staff. Applicants should have at least two years' analysis experience coupled with some management experience. The salary structure is attractive and fringe benefits are all you would expect from a company of this stature.

SENIOR BUSINESS ANALYST

£7500

A large software house, shortly moving to new premises in the West One area, is currently seeking a Senior Business Analyst to join an expanding team of consultants. Applicants should be fully conversant with IBM mainframes, will have a good 5 years' in Data Processing, of which at least 2 years must have been spent in a senior capacity. Previous experience at Director level is essential. This is an ideal opportunity for anyone seeking a challenging and interesting career. Remuneration consists of full travelling expenses, BUPA and bonus yearly profit.

datascene

OPERATORS & DATA CONTROL

ICL 1900 GII SHIFT LDR	£4200	ICL	GII	SRA OP	18mths +	N. LONDON	£3600
		ICL	GH	OPERATOR	1yr	W. LONDON	£3600
		ICL	GII	SRA OP	2yrs	C. LONDON	£4000
		ICL	GH	SRA OP	18mths	E. LONDON	£4300
IBM 370 OS SENIOR OP	£4600	IBM	2900	OPERATOR	1yr	MIDDX	£3500
		IBM	DOS	OPERATOR	1yr+	C. LONDON	£3800
		IBM	OS	OPERATOR	1yr+	C. LONDON	£4000
IBM 370 DOS SNR & JNR OPS	£4400	IBM	OS	OPERATOR	1yr+	CROYDON	£3700
1-2 years' exp. required for installation based in E. London. Excellent salary and perks including subsidised mortgage, loans and meals.		IBM	SNR	OP	18mths	SUSSEX	£4000
		IBM	OS	SUP(DAYS)	18mths	W. LONDON	£4200
		NCR	B1	JUN OP	8mths	ESSEX	£3600
PDP II OPERATOR	£4000	NCR	MCV	OPERATOR	1yr	SURREY	£3700
18 months' exp. required for a Merchant Bank in the City. Good career prospects and perks include Mortgage subsidy.		UNIVAC	OS3	OPERATOR	8mths+	CITY	£3600
		UNIVAC	DEC10	OPERATOR	18mths	C. LONDON	£4200
NCB B1-B2 OPERATOR/SENIOR OP £4000+		UNIVAC	DEC11	EVERINGS	1yr+	C. LONDON	£3600
A minimum of 2 years' exp. required for this N. London site. 3 shifts and latest NCR hardware.							

DATA CONTROL

PRODUCTION ASSISTANT OS/VSI	£4000	SENIOR DATA CONTROLLER - 8mths	KENT	£5000
2 years+ exp. in data Control, plus a good working knowledge of JCL. Good career prospects plus Season Ticket Loans and free BUPA.		SENIOR DATA CONTROLLER - 10mths	C. LONDON	£5500
		DATA CONTROLLER/TAPE LIBRARIAN	CROYDON	£3800
		TRAINEE OPERATORS/DATA CONTROLLERS		£3300

Plus many more positions also available

DATASCENE RECRUITMENT LTD

Scopiro House
169-173 Regent Street
London W1R 7FB

01-439 7871
24-hour answer phone

MIDLAND RECRUITMENT FEATURE

Advertisers are reminded that on June 22 Computer Weekly is highlighting career opportunities in the Midlands with a recruitment feature.

To secure space in this important feature:

Contact Alan Escott 021-356 4838
or John Farrar 01-261 8098

Copy deadline, 4 p.m., Friday, June 16

A CHANGE IS AS GOOD AS A REST

SYSTEMS ANALYST

To £7470

London
Applicants for this position are required to have a degree or similar professional qualifications, at least 3 years' data processing experience with 1 year analysis and design and a programming background. The company are an ICL installation and are looking for several years experience of commercial systems on mini computers plus experience on the design and specification of user systems and a sound knowledge of hardware and software capability. The ability to communicate at all levels, enthusiasm and a sound business acumen is required. The purpose of this position is to verify that business systems have been specified in sufficient detail in order that an efficient computer system can be designed and implemented. For further details phone now quoting reference number.

AOC 1072

ANALYSTS PROGRAMMERS

To £7000

Sussex Coast
If you have had as little as 18 months' COBOL programming or systems experience then our client, who is a world leader in telecommunications, have a lot to offer. Financially, apart from very attractive salaries they are prepared to assist substantially with relocation costs should successful applicants wish to move to this desirable part of the Sussex coastline. A new and interesting challenge plus good promotional prospects are available for professional people who have had experience with commercial on-line systems, stock control or financial applications. No previous experience on IBM equipment is necessary as retraining will be given. For more details phone now.

AOC 1063

for analysts with 18 months' systems experience or to £4800 for programmers with a minimum of 2 years' COBOL programming. A rare chance to develop your career within a professional organisation who place data processing at the heart of the company's development plans. Our client is situated in modern premises in the centre of Liverpool with excellent communications by road or rail for outlying residential areas. To get the best available people this company are offering up to 100% relocation costs, good salaries for situation and generous bonus schemes. For more details of what our client has to offer make enquiries now quoting reference number.

AOC 1069

for analysts with 18 months' systems experience or to £4800 for programmers with a minimum of 2 years' COBOL programming. A rare chance to develop your career within a professional organisation who place data processing at the heart of the company's development plans. Our client is situated in modern premises in the centre of Liverpool with excellent communications by road or rail for outlying residential areas. To get the best available people this company are offering up to 100% relocation costs, good salaries for situation and generous bonus schemes. For more details of what our client has to offer make enquiries now quoting reference number.

AOC 1087

SYSTEMS PROGRAMMER

To £8000

City
Programmers with 2 years' COBOL experience on IBM equipment DOS/VIS POWER/VS with CICS and PL/I, or programmers with just 2 years' COBOL experience who would like to be trained on the above mentioned equipment, should take this excellent opportunity. Our clients who are a major finance company in the heart of the city, require a systems programmer to help implement and evaluate new software packages, also to maintain current systems. Season ticket, personal and house loans are made available to the successful applicant at discounted rates. Daily meal allowance and other large company benefits are included together with the very attractive salary makes an interesting proposition.

AOC 1017

PROGRAMMERS

£7000

Our clients, a major and dynamic software house are seeking to recruit Critical Application programmers to work in a team in City.

They are looking for additional systems analysts at least 3 years' experience, preferably gained in an IBM environment, and the ability to travel internationally.

Conditions of employment are outstanding.

For further information contact Alan Escott 021-356 4838.

Or John Farrar 01-261 8098.

Copy deadline, 4 p.m., Friday, June 16

FORTRAN OR ASSEMBLER PROGRAMMERS

£7000

An expanding software house situated near the Sussex coast, are looking for programmers to work on commercial business systems using mini-computer environments.

They will have a minimum of one year's experience of these types of applications, and

in addition, the company is looking for Assembler programmers with one year's experience on mini-computers to work on a multi-processor system with communications and database.

Experience on this sort of work is well regarded.

AOC 1038

Gryphon Computer Recruitment

Essex House Cherrydown Basildon Essex

Contact Chris or Olivia on 0268 282155

SYSTEMS CONSULTANT

To £9000

Berkshire
If you are between the ages of 25 and 35 years with a good practical knowledge of data processing and computing techniques, this is an outstanding opportunity for career advancement. Applicants are required to have had several years experience of commercial systems on mini computers plus experience on the design and specification of user systems and a sound knowledge of hardware and software capability. The ability to communicate at all levels, enthusiasm and a sound business acumen is required. The purpose of this position is to verify that business systems have been specified in sufficient detail in order that an efficient computer system can be designed and implemented. For further details phone or send CV to our address quoting reference number.

AOC 1073

SYSTEMS ANALYST

To £6750

Southampton
for a systems analyst with 3 years' systems experience to work for a small data processing bureau nicely situated in a desirable area on the south coast. The person will be required to act as a support adviser to the bureau customers backing up a sales person as well as organise a small team of programmers working on customer systems. The bureau have a Univac 9400 running most types of commercial package applications as well as designing and writing systems to suit individual customer requirements. More details available for this position.

AOC 1101

JUNIOR SYSTEMS ANALYST

To £6455

London
If you are a programmer with a minimum of 2 years' COBOL programming experience looking to broaden your computer career as a systems analyst then this is a very viable proposition. Applicants are required to have professional qualifications or a degree and be able to work with minimum supervision. For more details phone now or send written CV to our address quoting reference number.

AOC 1073

PROJECT LEADER

£6300

Slough
Our client is offering an excellent opportunity for a person with 5 years' systems experience plus a good working knowledge of IBM 370 hardware, and software. The successful applicant will be required to lead a team working on TP applications development with mini computer involvement. The company run a non-contributory pension scheme, provide subsidised lunches and operate flexitime working hours. Phone now for more details.

AOC 1111

SYSTEMS PROGRAMMER

To £6000

Middlesex
To qualify for this opportunity to move into systems programming, applicants must have a minimum of 2 years' PLAN programming experience to work on the company's ICL 2803 computer. If you have had the required amount of PLAN programming experience without the systems experience, this position is still very open to you, enquire now for more details, quoting reference number.

AOC 1120

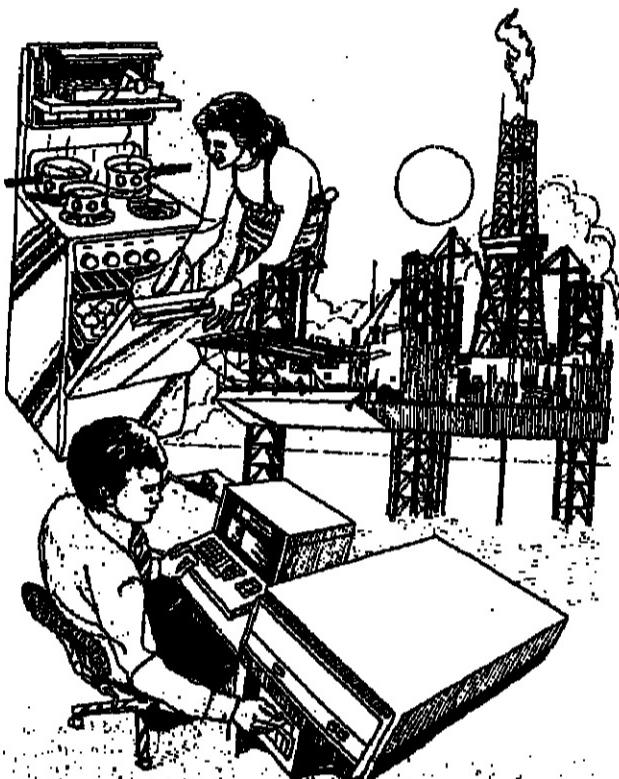


D.P. RECRUITMENT LTD.
KENT HOUSE, 87 REGENT STREET, LONDON W1R 7HF
TEL: 01-437 2062/3/4 (24-HOUR ANSAPHONE)



GAS GETS ON WITH IT-

Working for a better Britain



North Thames Gas

covering more than 1000 square miles through 24 densely populated Boroughs and employing nearly 13,000 staff providing a service to 1.86 million domestic, commercial and industrial customers.

Customer Service

an area of great importance for ourselves and the consumer. It is into this crucial environment of our operations that we wish to recruit further computer professionals who will help to continually update and improve our systems by joining one of the most exciting projects in the country.

Extensive Distributed Computer Application based on mini-computers with multi-terminals

Application

We are setting up a computerised customer service system based on distributed mini-computers. Will provide on-line customer information through large numbers of

Hardware

Data General C330 mini-computers, large data storage, printers, several hundred VDUs. These mini-computers will eventually be linked into our extensive mainframe installation (currently 3 x ICL computers with 200+ remote terminals).

People & Locations

We are seeking experienced Analysts, Programmers, Software + Operations Specialists (male and female) to work at one of two locations in West London - either our Development Centre in Acton or the Regional Computer Centre in Slough.

Training

We consider our training and development approach for computer staff to be among the best anywhere - ask any of our present staff.

Prospects

According to your age and experience, the starting salary will be in the range £4500-£6000 which includes Metropoly, Weighting and pay policy supplements. We offer an excellent benefits package and long term career prospects are likely to be first rate.

Action

Finding out about our vacancies is just a telephone call away. Ring Slough 01800 and ask for Peter Woodhams, our Computer Manager in charge of the Slough installation. Or else write briefly (including an application form if necessary at this stage), to Mike Hinds, North Thames Gas, North Thames House, London Road, Slough, Berkshire, TW18 4AE, quoting reference R/2000.



NORTH THAMES GAS

Computer Operator

A Progressive Career in Bracknell

We operate on 2030A under OS/2000 on a 2-shift system, using disc, tape and the output from a Rediffon Seecheck system.

Owing to the promotion of an Operator to Programmer, we are seeking someone with at least a year's relevant Honeywell operating experience to join our team providing a service to the Clark Eaton Group - leading flat glass, merchant glazing contractors and glass processors.

The benefits are those normally associated with a progressive company including relocation assistance where appropriate.

Find out more about them and the salary provided by calling Vincent Murphy, Personnel Manager, on Bracknell (0344) 24733 or write to him at James Clark & Eaton Limited, PO Box 19, Southern Industrial Area, Bracknell, Berkshire RG12 4UU.

CLARK C

Anglian Water Authority
Courses in Systems Analysis 1978-79
Diploma in Systems Analysis

CORPORATE PLANNING

To £6,000 (INJC Grade 6)
* Plus New Award from July 1978 *

Do you understand computers?
Can you analyse situations and make computers work for you?
Can you help us to analyse the effects and benefits of our Capital Development Programme?

The Anglian Water Authority invest £300M every 5 years on the water services in an area covering one fifth of England.

The investment data base is currently held on a DEC PDP 10 but will shortly be transferred to the Authority's own Honeywell 66/10.

If you have a flair for problem solving and want to join a small professional team of Corporate Planners, contact us but only if you can pull your weight!

We are looking for one good Programmer with at least 3 years at the senior level who wants to broaden his/her scope. Previous experience of Corporate Planning is not necessary - but you should understand computers and how to make them do the work. Programming experience in FORTRAN is an advantage as would experience with Honeywell 66/10 on DEC PDP 10 machine, but we are prepared to train a person with the right attitude and proven ability.

If you are interested or want to know more about this opportunity, why not call Peter Cowie, Huntingdon 0403 55151 Ext. 263 for information and an application form.

The closing date for applications is 22nd June, 1978 and should be sent to ANGLIAN WATER AUTHORITY Diploma House, Grammer School Walk Huntingdon, Cambs. PE18 6NL

TOP GRAVES MAY BE AVAILABLE FOR SUITABLE MSc STUDENTS

THE OPEN UNIVERSITY DATA PROCESSING DIVISION

LONDON BOROUGH OF HARINGEY COMPREHENSIVE HOUSING SERVICE

COMPUTER OFFICER

£6,044 £6,662 plus casual user allowances £0.50

Haringey Council is looking for a person who has computer systems development experience and who would now like to move into a management role. An effort to improve the operating efficiency and information systems of the Housing Service for the benefit of the public.

An independent self motivated person is therefore required who can ensure that new or existing computer based systems are fully developed and used.

This is a new post which is based around the Housing Service to ensure that benefits derived are service orientated. The post holder will also be responsible for the day-to-day running of the development team, whose main role is to develop the use of a joint computer system, which is an IBM 370/168. The successful applicant could work on any Housing Service function but would be primarily involved in financial accounting (e.g. property records, rents, welfare lists etc.) and should have the ability to liaison with other departments and to plan and identify areas where computer development can be applied.

Applications are invited from persons with knowledge of Unisys 1100 series, basic knowledge of programming and some practical experience. Good development proposals and plan and in addition we offer: Good holiday provision; excellent sports and social facilities, and rural location with houses available to rent or purchase at reasonable prices. (Removal expenses are payable).

Application forms and further particulars are available, by post, from: The Recruitment Officer (OP2), The Open University, P.O. Box 76, Walton Hall, Milton Keynes, MK7 6AL or by telephone from: Milton Keynes 08204 or 03287 (24 hours answering service).

Closing date for application 29th June 1978.

CONTRACT PROGRAMMERS

Experienced in one or more of the following:

* COBOL * PL/I * ASSEMBLER * C/C++ * BASIC *

* TECI * MINIS * CII * CII+ * COBOL + * 65 *

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THE SALES BIT

Objections and rebuttals PART II

In last week's column we were discussing some of the disciplines which salesmen might adopt, related to the handling of questions within the sales negotiation. The main points were: 1 — Answer all objections and questions truthfully but qualify their relevance; 2 — Don't leave questions unanswered; 3 — Always listen carefully and never interrupt.

Let's consider a couple of more basic rules:

The salesman should never argue with the buyer or tell him he is wrong. Whatever the circumstances, an unemphatic atmosphere is almost certain to result. This is true whether the buyer is actually wrong or not. Full-frontal contradictions seldom work to a salesman's advantage.

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Puzzle answer

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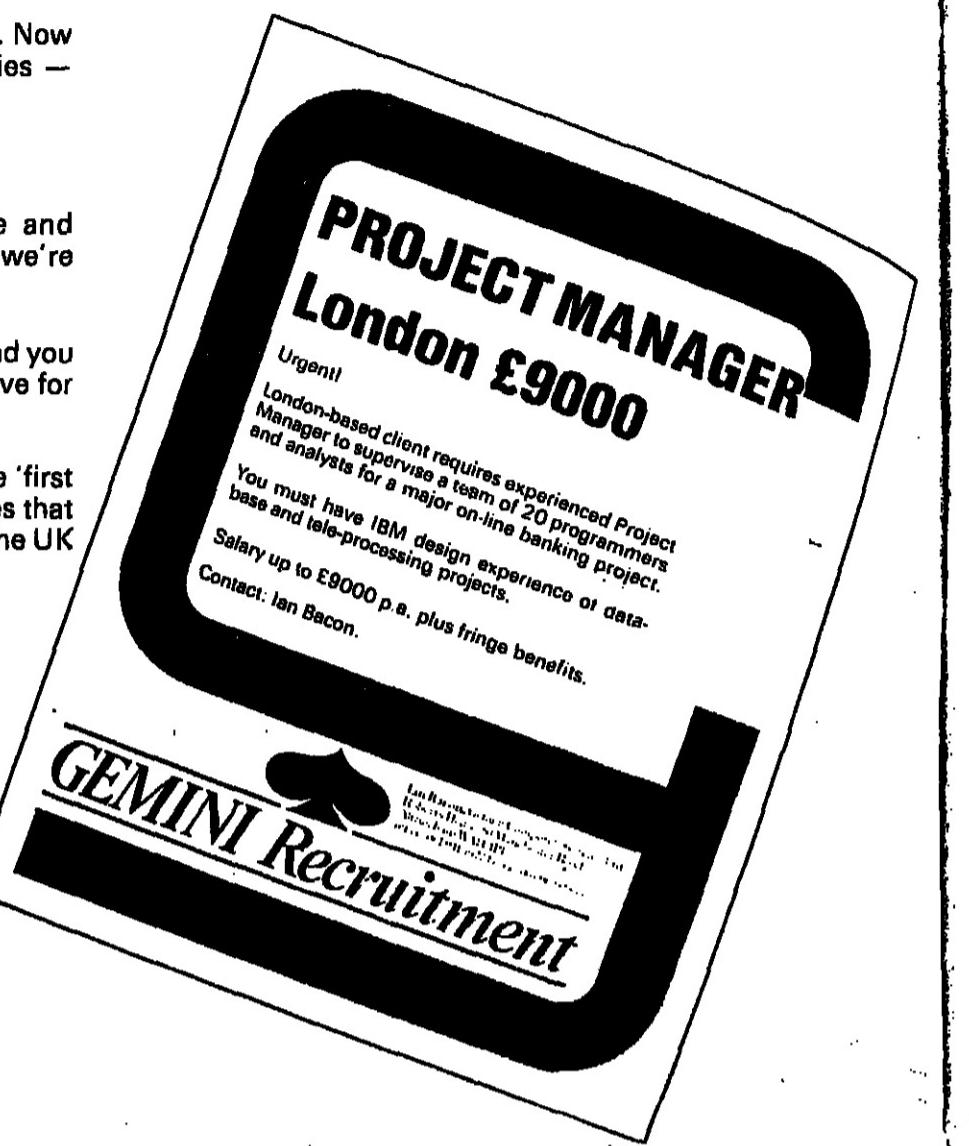
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SENIOR SYSTEMS ANALYST

West End £6000 to £7300

An opportunity has arisen for an experienced and articulate Systems Analyst to progress into a more demanding and responsible position, leading and co-ordinating the work of a team of three other analysts.

The installation comprises an ICL 1903 machine running under GEORGE II, and an extensive Real Time system utilising DRIVER and COMMS MANAGER. Experience in any of these areas would be highly desirable, as would a programming background in either COBOL or PL/1.

You should have at least 4 years total DP experience, 2 years of which should be in Systems Analysis, and during this time you ought to have installed 2 major systems. The work will cover many different projects and will involve a wide area of systems and applications.

COBOL PROGRAMMERS

City £4000—£5000 plus Mortgage

A major financial organisation with an expanding ICL 2900 system is seeking several programmers for their city-based installation.

These positions will be ideal for people with at least one year's commercial experience gained preferably on ICL equipment.

The company offers a high starting salary and an excellent benefits package including Season Ticket Loans, Flexitime and a Mortgage Subsidy Scheme.

PL1 PROGRAMMERS

City £6000 plus mortgage

A major financial organisation needs programmers with 2 years good commercial experience to join their expanding DP department in the City.

They currently operate a twin IBM 370/138 system, running under DOS/VSE, and have a comprehensive communications network; so any knowledge of CICS would also be an advantage.

In addition to a competitive starting salary and excellent career prospects, the company offers interest-free Season Ticket Loans, free Life Insurance in Annual Bonus scheme, and a 3% Mortgage.

Reference JC 23/5

SYSTEMS PROGRAMMER

City Negotiable

A large and highly respected financial institution is seeking a capable and imaginative OS/VS Systems Programmer to work in their City based installation. They are using two IBM machines — a 370/148 and a 370/168, running under OS/VS1 with VM/CMS.

The ideal candidate would have a general programming background preferably in ASSEMBLER or PL1, with a minimum of around 18 months in DS or OS/VS Systems Programming. Knowledge of IBM 370 Hardware and Software fundamentals is desirable as is any experience of performance measurement and estimation techniques.

Salary will be totally dependant upon ability and experience, and will not prove a limiting factor for the right person.

Reference JC 23/4

FORTAN PROGRAMMERS

London £4000—£6500

A major engineering company located just south of the river near London Bridge Station require an experienced Fortran programmer. The suitable applicant should have a degree in Applied Mathematics or Engineering and at least two years experience in Fortran, preferably on IBM equipment.

The company offers a high starting salary and an excellent benefits package including Season Ticket Loans, Flexitime and a Mortgage Subsidy Scheme.

Reference JC 23/2

COMMUNICATIONS PROGRAMMERS

Hertfordshire & North Kent £4000—£6000

A market leader in computer based communications equipment have a number of opportunities for engineers and programmers in the following areas:

Distributive Processing
Compiler Software
Data Communications
Micro Processors

Experience in any of the above, possibly coupled with a degree, would lead to an excellent salary together with a generous benefit package which includes Flexitime, 24 days Holiday, L.V.'s, Generous relocation expenses and Subsidised Company products.

Reference PG 23/3

Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 2 (A Mental Block)

Hex has been taken prisoner at Sprocket's Hole and forced at gunpoint to switch off Ascii. Now he awaits his fate with resignation.

Sheriff Sprocket accepted the pipe from his partner and took a couple of deep breaths. A look of satisfaction settled on his features. Hex averted his eyes and sat with his head cast down, his mind so empty of ideas for escape it might have been running the null job. He gazed at the floorboards in silence, losing all track of time.

Suddenly he was aware of a monotonous rhythmic drone. He raised his eyes to look at the androids. There was Sprocket, slumped deep in the rocking chair with the rifle still cradled in his arms, fast asleep and snoring like an old walrus. Bill Bootstrap had actually slid off the bench and knelt against the table, his chin propped up by it, with a beatific smile on his face. The clay pipe had fallen from his lips and splintered into pieces on the floor. Beside it lay his shotgun.

At that moment, as Hex gaped in astonishment at this golden opportunity for deliverance, the door creaked gently open and Cleo crept into the room. In spite of his amazement, Hex was the first to speak.

"You risked your life," he said.

"So did you when you dragged me clear of the mob on the reservation," she answered, "and by coming here."

"How did you do it?"

"I knew when I overheard the Network news that they would be expecting you, so I changed the hash coding algorithm in Bootstrap's n-dimensional dope vector. He got something stronger than he bargained for. Now he's gone into a hibernative state." She broke off as Davy Sprocket's body was rocked by a particularly convulsive snore. "Better get packing," she urged Hex. "We can't sit about talking all night."

"But it will take hours to power up Ascii safely."

"By which time Kludge and his inquisitors will be here. They're due early in the morning."



"Yes, but if I just switch the juice on again he might have a head crash, or worse."

"If you don't want to risk it we'll have to carry him."

Hex looked down at Ascii's prone body, weighing the best part of a hundred kilograms, and scratched his chin. "I've had an idea," he said after a moment's thought. "Is there any wire in this god forsaken hole?"

"Well, there's a 25-pin cable leading from the teletype."

"Fine! This will only take a few minutes."

Hex went over to Bill Bootstrap and gingerly extracted from his limp hand the leather pouch containing all his worldly possessions which the android had confiscated. In it were the blueprint for an anti-data "black noise" generator and the 40-pin microprocessor that Null had bequeathed to him. At the bottom was his soldering iron. He took it out and moved over to the archaic teletype.

Cleo watched in puzzlement and some impatience as he

ripped out the data lead and brought it over to Ascii. "What's the idea?" she inquired.

"It's safe enough to turn on his motors," explained Hex. "But I'm worried about his logic circuits. I didn't have time to go through the proper shut-down procedures, you see, and his memory may have been scrambled. So I'm going to check all his circuits and restart him in the normal way."

"You mean you're going to rig him up as a peripheral unit?" she asked.

"Exactly. I wonder if you could give me a hand," Hex said holding out the connector. "If you look on the back of my head you'll see a socket marked 'Auxiliary I/O port'. Plug it in there."

Cleo plugged it in and Hex finished soldering the connection on Ascii. "Right," he said, "now before we try it out, you collect their weapons." Cleo carefully prised the rifle from under Sprocket's forearm, then picked up Bootstrap's shotgun.

"Okay, stand clear," advised Hex. "here we go!"

Cleo edged towards the door. Hex touched the live wire to Ascii's batteries. For a fraction of a second nothing happened. Then a red warning indicator flashed on Ascii's nose and the hut was filled with the screech of a siren.

"Motherf---" swore Hex, throwing open the lid between Ascii's ears. His hand dived in and flicked a switch. There was peace once more. "I forgot to switch off the audio alarm," he apologised to Cleo.

"So I noticed," she replied.

Throughout it all Sprocket's regular snoring had continued uninterrupted. "It seemed louder than it was," added Hex in self-justification. "Any way he's ready to roll now. Could you please open the door for us."

Cleo pulled it open and made her exit into the night. Then Ascii jerked into motion under Hex's guidance and the pair of them, linked by two yards of wire, lurched drunkenly towards the door. Mercifully, they missed all the obstacles in their path.

When they rejoined Cleo outside Hex turned to shut the door behind them, then paused as if he had forgotten something.

"Wait a minute," he said, and pulled out the data cord again. Before Cleo could voice her objections he had re-entered the hut and strode over to the now-defunct terminal in the corner. He switched it off-line and typed one word.

BYE.

Would Cleo be better off without her 'rescuers'? Read next week's issue for her own opinions on the subject.

© 1978, Richard Forsyth, Rain Timesharing.

Data recorder

Up to 85 characters can be recorded on a magnetic tape cassette using the Portac 200 hand held data recorder from the US firm, Techtron Industries.

The Portac 200 comes with a 16-key pad, a display and a cassette drive. Data is displayed for verification as it is entered and recorded.

The Portac 200 can be battery powered and can operate for about four days between charges according to Techtron.

It weighs three pounds and costs \$825 (2490), including a tape cassette and charger. Applications are seen for the Portac 200 in warehousing and retailing.

Techtron Industries Inc (C.W.), 200 Commerce Drive, Rockville, New York, 10423, USA. Tel: 212 373-3231.

Vacuum tubes

DIGITAL instruments are seen as one application area for the Itron range of vacuum phosphorescent tubes from ITT Component Services. They can display up to 40 digits and alpha-numeric characters.

ITT explains that an Itron tube consists of three electrodes; namely a cathode, a grid and a phosphor coated anode. The latter is divided into seven or more independent segments for each character. When activated they glow with a blue-green colour. Between two and 40 digits can be displayed at a time.

The Itron 500 comes with a series of switch selectable pre-programmed exercises. These can isolate and identify data errors, format errors and seek errors in linked systems with between one and four digits. If an error is encountered the Itron 500 can stop or indicate the error and carry on running.

Wilson Laboratories Inc (C.W.), 2534-1 East Foothill Avenue, Fullerton, California 92631, USA. Tel: (714) 731-2421.

ITI Components Services (C.W.), West Road, Harlow, Essex, Tel: 0279 35531.

Why vacant memory slots aren't needed

Cleaning system

A magnetic disc cartridge cleaner is one of the products being sold by a new marketing company, International Automation Ltd, of Virginia Water, Surrey, which is offering European sales and support facilities to companies manufacturing novel computer products.

The cartridge cleaner is the Model 301 from US firm, Innovative Computer Products Corp. It is available in two versions, one for handling IBM 5340 type top loading cartridges and the other for 2315 type front loading cartridges. It can clean both sides of a cartridge in three minutes.

International Data Automation Ltd (C.W.), 33 Abbotts Drive, Virginia Water, GU26 4AH, Tel: 0890 2838.

VACANT memory slots are not needed for the 301 range of add-on memories offered to Digital Equipment PDP-11 users by Systech Ltd. Instead, the 501 memory can operate a small peripheral control slot of quad or hex height. It is compatible with the DEC PDP-11 memory management unit and can be supplied with a capacity of 4K, 8K, 12K and 16K words of 16-bit. It can easily be upgraded from 4K to 16K, according to Systech. The 501 memories use existing Unibus power and come with board control and refresh circuitry. They can be used with existing core memory.

The components used with 501 memories are 4K dynamic MOS RAM chips with an average access time of 570 nanoseconds. Typical cycle times are 505 nanosecond refresh, 880 nanosecond write and 765 nanosecond read.

The Super Silent Block comes with an asynchronous motor and an AC generator mounted on the same shaft. This is housed, together with the associated control equipment, in a sound proof cabinet which reduces the noise level to 36 decibels (dB) measured at one metre. Anton Piller Ltd and converts power from 240V to 41 Hz.

The Super Silent Block uses a 75 kilowatt unit, the bus variation is available for different voltage and frequency requirements.

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